Wastewater Management in Industrial Zones of the Vietnamese Mekong Delta

A Socio-spatial Analysis of Environmental Management in a Transition Economy

Dissertation

zur

Erlangung des Doktorgrades (Dr. rer. nat.)

der

Mathematisch-Naturwissenschaftlichen Fakultät

der

Rheinischen Friedrich-Wilhelms-Universität Bonn

vorgelegt von

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Bonn

November 2014

Angefertigt mit Genehmigung der Mathematisch-Naturwissenschaftlichen Fakultät der
Rheinischen Friedrich-Wilhelms-Universität Bonn

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Tag der Promotion: 07. Mai 2015

Erscheinungsjahr: 2015

Acknowledgements

My deepest gratitude goes to the late Prof. Dr. Jürgen Pohl, without whose patient guidance I would not have been able to pack up my desk to leave for Vietnam, without whose encouragement I would not have navigated the obstacles in the field, and without whose incisive comments and insights I would not have overcome the hurdles in conceptualising my work. Even though our journey together had to end prematurely, I owe much to him. My gratitude also goes to Prof. Dr. Detlef Müller-Mahn, who then took over the supervision. Without his generosity, the completion of this work would not have been possible. I would also like to thank Prof. Dr. Mariele Evers for agreeing to be my second supervisor.

Panagiota, Gabi, Linh, Dunja, and Sven: thank you so much for the memories of good times in Can Tho and Bonn that I can look back on when I think of my PhD, and all the mental and emotional support on discouraging days. Elena, Ruchika, and Anna: you made the time in the office pass easier with the promises of common coffee breaks. All of your mental support and knowing that all of us are in the same boat made it easier to keep rowing.

I also wish to thank all the people in Vietnam who lent me much of their time to help me understand their country and finish my research. My gratitude also goes to the institutions – the BMBF, the UNU-EHS, and ZEF – for their financial support and hosting.

Michael, my pillar, my coach and my cheerleader in one, without your constant encouragement, patience, and sacrifice, this would never have happened. I owe much to my mother as well, who jumped in without hesitation and conditions to take over my mothering duties so that I could work. Elsa and Thilo, you were the ultimate distractions, and the ultimate motivation. You had to wait while I wrote, but you now have all of your mother's undivided attention.

November 1, 2014

Abstract

Industrial zones were introduced to Vietnam in the late 1990s, and have sprouted across the country. The largely agrarian Mekong Delta boasts of hosting about a hundred industrial zones. Although important policy tools in attracting foreign investment, the zones also impact adversely upon the environment. Given their prevalence and policy weight, it is important to understand the workings of environmental management in the industrial zones. The triad of missing capacity-financing-regulation is the common diagnosis for environmental management problems, and the structural features and contradictions of the Vietnamese state and its transition economy, which take centre stage in other analyses of the political economy, have been largely neglected.

This work seeks to explore and reintroduce this context into its analysis of wastewater management in the industrial zones of the Vietnam Mekong Delta by employing an institutional analysis and an inductive research strategy. The qualitative empirical data comprises 100 semi-structured interviews with state agencies, companies, consultants, households affected by pollution, provincial documents, as well as media reports in four provinces along the Hau River during the period May 2011 to February 2012.

Socio-spatiality was found to offer explanatory power and contextualised insights. The Vietnamese state administration system manifested itself vertically in hierarchical relations, and horizontally with ambiguous operational boundaries between agencies of technically equal standing. Both the operational mandates of the state agencies and even non-state monitoring processes were shaped by this administration structure. The industrial zone itself was vested with social and symbolic meanings accented by the spatial incompatibility between its physical location and management. Law was found to be the medium that expressed and facilitated these multiple dimensions of socio-spatiality of hierarchy, place meanings, and operational territories. The institutional analysis shows itself, retrospectively, to be an implicitly spatial research strategy that does not incline to any one dimension of socio-spatiality.

Thus, the rediscovery of multiple dimensions of socio-spatiality underpins this work's call to better contextualise environmental management analyses through the implicitly spatial institutional analysis.

Key words: institutional analysis, Mekong Delta, Vietnam, transition economy, rural industrialisation, industrial zones, wastewater management, socio-spatiality, legal geography

Zusammenfassung

Industriezonen wurden in den späten 90er Jahren in Vietnam eingeführt und verbreiteten sich rasant. Selbst in dem fast ausschließlich ländlichen Mekong-Delta gibt es fast ein hundert Industriezonen. Die Zonen sind wichtige Instrumente zur Ansiedlung ausländischer Unternehmen, aber sie wirken auch nachteilig auf die Umwelt. Angesichts ihrer Verbreitung und Relevanz für die vietnamesische Industriepolitik ist ein tiefes Verständnis des Umweltmanagements in den Zonen erforderlich. Der Dreiklang aus fehlender Kapazität, Finanzierung und Regulierung ist die gängige Diagnose für Umweltmanagement-Probleme. Die strukturellen Eigenschaften und Widersprüche des vietnamesischen Staats und dessen Übergangswirtschaft, die bei Analysen der vietnamesischen politischen Ökonomie eine Hauptrolle spielen, bleiben aber oft außer Betracht.

Diese Arbeit erforscht diesen Kontext induktiv und mithilfe institutioneller Analyse im Hinblick auf das Abwassermanagement in den Industriezonen des vietnamesischen Mekong-Deltas. Die empirische Grundlage bilden qualitative Daten aus 100 semi-strukturierten Befragungen mit staatlichen Behörden, Firmen, Beratern und von Verschmutzung betroffenen Haushalten sowie Medienberichte über vier Provinzen entlang des Hau Flusses in dem Zeitraum von Mai 2011 bis Februar 2012.

Der Ansatz der sozialen Räumlichkeit bietet Erklärungsgehalt und kontextualisierte Einsichten. Das vietnamesische System der Staatverwaltung manifestiert sich vertikal durch hierarchische Beziehungen und horizontal durch unklare operative Zuständigkeiten zwischen gleichgestellten Behörden. Sowohl die Mandate der staatlichen Behörden als auch die der nichtstaatlichen, gemeindebasierten Aufsicht werden durch diese Verwaltungsstrukturen geprägt. Der Industriezone selbst wird soziale und symbolische Bedeutung verliehen, die durch die räumliche Trennung zwischen ihrer physischen Position und ihrer Verwaltung betont wird. Durch das Recht werden diese vielfältigen Dimensionen der sozialen Räumlichkeit von Hierarchie, Ortsbedeutungen und Einsatzbereichen ausgedrückt und ermöglicht. Die institutionelle Analyse erweist sich retrospektiv als ein implizit räumlicher Forschungsansatz, der nicht nur eine einzige Dimensionalität der sozialen Räumlichkeit abdecken kann.

Die hier wiederentdeckte Mehrdimensionalität der sozialen Räumlichkeit unterstreicht den Aufruf dieser Arbeit, Analysen des Umweltmanagements durch den implizit räumlichen Ansatz der institutionellen Analyse besser zu kontextualisieren.

Stichwörter: institutionelle Analyse, Mekong Delta, Vietnam, Übergangswirtschaft, ländliche Industrialisierung, Industriezonen, Abwassermanagement, soziale Räumlichkeit, Rechtsgeographie

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Unless otherwise indicated, all figures, tables, and pictures are the author's own.

Abbreviations

ADB	Asian Development Bank
AGEZMB	An Giang Economic Zone Management Board
AKIZ	Integrated Wastewater Concept for Industrial Zones Project
AusAID	Australian Agency for International Development
CEM	Centre of Environmental Monitoring
CEPIZA	Can Tho Export Processing and Industrial Zone Authority
CIEM	Central Institute for Economic Management
CIPCO	Can Tho Industrial Park Construction and Development Company
CPR	Common pool resource
CPV	Communist Party of Vietnam
CWWTP	Centralised wastewater treatment plant
DOIT	Department of Industry and Trade
DONRE	Department of Natural Resources and Environment
DvONRE	Division of Natural Resources and Environment
DPC	District People's Committee
DPI	Department of Planning and Investment
EIA	Environmental impact assessment
EEPSEA	Economy and Environment Program for Southeast Asia
EPA	Environmental Protection Agency
EPZ	Export processing zone
EZ	Economic zone
FDI	Foreign direct investment
GOV	Government of Vietnam
GSO	General Statistics Office of Vietnam
IAD	Institutional Analysis and Development Framework
ICEM	International Centre for Environmental Management
IDE-JETRO	Institute of Developing Economies, Japan External Trade Organisation
IIED	International Institute for Environment and Development
ISEAS	Institute of Southeast Asian Studies
iWWTP	Individual wastewater treatment plant
IZ	Industrial zone
IZMB	Industrial zone management board
JICA	Japan International Cooperation Agency
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resources and Environment
MOST	Ministry of Science and Technology
MOSTE	Ministry of Science Technology and Environment

MPI	Ministry of Planning and Investment
NA	National Assembly
PPC	Provincial People's Committee
PUBU	Public non-business unit
SRV	Socialist Republic of Vietnam
TPSN	Territory-Place-Scale-Network Framework
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organisation
VCCI	Vietnam Chamber of Commerce and Industry
VEA	Vietnam Environmental Agency
VEPF	Vietnam Environmental Protection Fund
VND	Vietnamese Dong
VPEG	Vietnam Provincial Environmental Governance Programme
WB	World Bank
WISDOM	Water-related Information System for Sustainable Development of the Mekong Delta

1. REINTRODUCING CONTEXT INTO ENVIRONMENTAL MANAGEMENTANALYSES

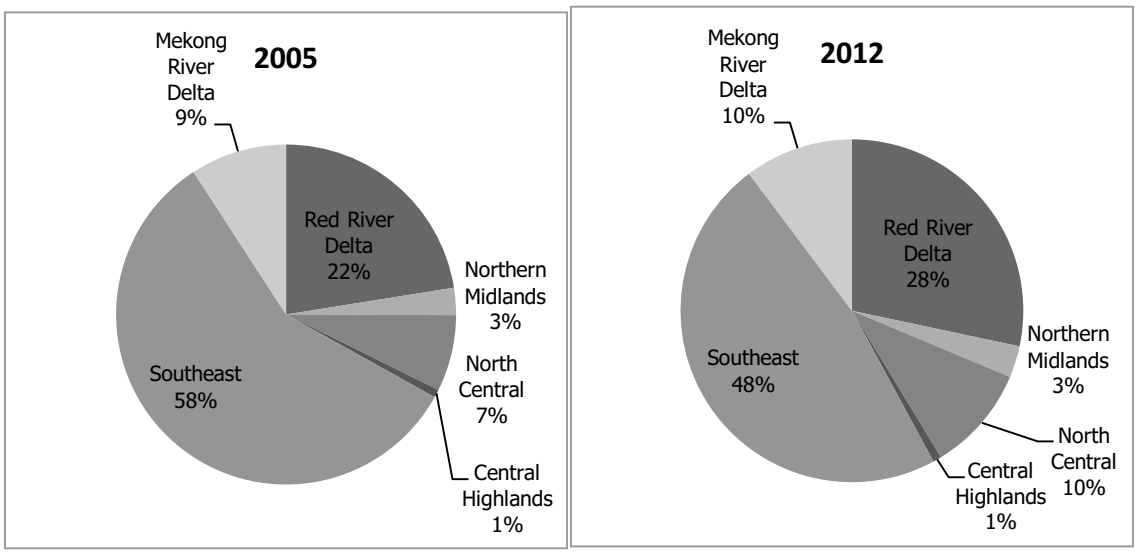
1.1 Research background and problem statement

Doi Moi, the Vietnamese "renovation", is the favoured point of reference in the literature on Vietnam. 1986 saw the centrally-planned Communist state take on liberalisation, decentralisation, and privatisation. The winds of economic change turned the contradictions of the transition economy – Vietnam's tendencies towards centralised top-down mechanisms, the blurred lines between public and private, the appearance of strength and unravelling control – into excellent fodder for research. As the country rushes along towards its development vision of industrialisation and modernisation by 2020, this economic renovation is clearly also an "environmental renovation" (Nghiem Ngoc Anh et al. 1995)[1]. At Vietnam's southwestern tip lies the largely agrarian and rural Mekong Delta, whose romantic, green, fecund and also strategically important paddy fields have not been left untouched by the Vietnamese state's modernist visions. Industrial zones are reportedly sprouting across the Delta; reported figures range from a handful to nearly 200. While, and because, it is not yet a pollution hotspot, it is pertinent to ask what exactly is going on there, and what the repercussions for the environment, agricultural production, and the Mekong River are.

The characterisation of Vietnam as industrialising, based on aggregated data, blends out the regional disparities and obscures the situation in the Mekong Delta. Most of the industrial output is generated by its two economic poles: the Red River Delta and the Southeast. These two regions alone account for more than three quarters of the country's economy (Figure 1: Structure of industrial output in 2005 and 2012). Although the contributions of the remaining lesser-developed regions to the national economy have increased from 20% to 24% between 2005 and 2012 (Figure 1: Structure of industrial output in 2005 and 2012), and comparatively grown more than in the economic poles, this is unsurprising in view of their much lower starting points (Table 1: Gross industrial output in Vietnam from 2005 to 2012). The less-developed regions are more agrarian and rural: 80% of Vietnamese agricultural land (Table 2: Land use in Vietnam) and 67% of the Vietnamese rural population (Table 3: Regional distribution of the Vietnamese urban and rural population) is to be found in the Northern midlands, North Central, Central coastal, Central highlands, and the Mekong Delta. These regions also have less-than-average proportions of trained workers and higher-than-average unemployment rates (Table 4: Labour force profile by region). The fact is that Vietnam remains largely agrarian and rural: in Table 2, it can be seen that even the economic growth poles are proportionally more agrarian than the national average: about 62% of the land in the Red River Delta and 79% of the land in the Southeast region is allocated to agriculture and forestry. Three quarters of the population reside in the rural areas (Table 3: Regional distribution of the Vietnamese rural population) and reportedly, 90% of this rural population is poor (WB 2006). The widening urban-rural gap has been acknowledged by the prioritisation of rural development in Vietnam's 10-year development strategy (CPV Central Committee 2001).

[1] Vietnamese authors are cited with their full names in order to avoid confusion due to the prevalence of certain last names.

Figure 1: Regional distribution of Vietnamese industrial output in 2005 and 2012



Source: GSO Statistical Database

Table 1: Gross industrial output in Vietnam from 2005 to 2012

(billion VND)	2005	in EUR (rounded to nearest mio)	2012 (preliminary)	in EUR (rounded to nearest mio)	Factor of change
WHOLE COUNTRY	988.540,00	34.599	4.627.733,10	161.971	3,68
Red River Delta	214.132,40	7.495	1.272.673,90	44.544	4,94
Northern Midlands	24.529,00	859	133.945,60	4.688	4,46
North Central, Central coast	69.160,80	2.421	449.054,40	15.717	5,49
Central Highlands	7.181,60	251	36.322,00	1.271	4,06
South East	550.139,30	19.255	2.139.671,70	74.889	2,89
Mekong River Delta	87.555,30	3.064	460.650,20	16.123	4,26

Source: GSO Statistical Database. 1 billion VND is equivalent to 35 000 EUR.

Table 2: Land use in Vietnam

	Land area (thousand hectares)		Land use by type (%)			
	Total	Agricultural	Agriculture	Forestry	Special	Homestead
NATIONAL	33095.1	10151.1	30.7	46.5	5.6	2.1
Red River Delta	2105.0	775.2	36.8	24.6	14.7	6.7
Northern midlands	9527.1	1571.1	16.5	59.9	3.0	1.2
North central, Central coast	9583.5	1863.8	19.4	57.4	5.8	1.9
Central highlands	5464.2	1985.2	36.3	51.8	3.7	1.0
Southeast	2359.9	1355.5	57.4	21.7	9.7	3.2
Mekong River Delta	4055.4	2600.3	64.1	7.5	6.3	3.0

Source: GSO Statistical Yearbook 2012. According to Decision 1482/QD-BTNMT of the Ministry of Natural Resources and Environment dated 10.09.12, the classification of land use as "special" refers to public land, land for business and non-agricultural production, land for security and defence, and land used by offices and non-profit agencies. "Homestead" land is land used for farms. Other categories of land use not included in these statistics include: religious land, cemeteries, rivers and water surfaces, as well as unused (flat, mountainous or rocky) land.

Table 3: Regional distribution of the Vietnamese urban and rural population

(thou. persons)	Total population	Urban	% urban	Rural	% rural
National	88772,9	28356,4	32%	60416,5	68%
Red River Delta	20236,7	6247,7	31%	13989	69%
Northern midlands	11400,2	1942,4	17%	9457,8	83%
North Central, Central coastal	19173,6	5009,5	26%	14164,1	74%
Central Highlands	5379,6	1544,1	29%	3835,5	71%
South East	15192,3	9283,6	61%	5908,7	39%
Mekong River Delta	17390,5	4329,1	25%	13061,4	75%

Source: GSO Statistical Database, as of January 2012

Table 4: Labour force profile by region, 2012

	% trained employed workers	unemployment rate
WHOLE COUNTRY	16,60 %	1,56 %
Red River Delta	24,00 %	1,09 %
Northern midlands	14,60 %	1,30 %
North Central, Central coast	14,90 %	2,45 %
Central Highlands	12,10 %	2,66 %
South East	20,90 %	0,57 %
Mekong River Delta	9,10 %	3,02%

Source: GSO Statistical Database, as of January 2012

The Mekong Delta epitomises these nuances. In a country that is undergoing urbanisation and industrialisation, the Delta is distinctively agrarian, with agricultural land twice the national average (Table 2: Land use in Vietnam). Yet, it is also highly productive, accounting for a tenth of the national industrial ouput (Figure 1: Structure of industrial output in 2005 and 2012). Still, the overwhelming majority of its population (75% as compared to the national average of 68%) rural and poor, and the region has the lowest proportion of trained employed workers (9% compared to the national average of 16.6%) and the highest unemployment rate (3%, twice the national average) in the country (see Table 4: Labour force profile by region 2012), such that this industrial productivity success of the Mekong Delta can scarcely be interpreted as proof of positive rural development. Indeed, the rural development strategies applied in the Mekong Delta have been questioned (AusAID 2004; UNIDO 2000) for their failure to deliver meaningful livelihood changes (Taylor 2007).

One particular aspect of Vietnam's rural development strategy is the introduction of industrial zones to draw investment to the otherwise overlooked rural areas, in the hope that they will generate employment and boost the rural economy (Mazur et al. 2008; WB 2011). The industrial zone, or the export processing zone, is a success story from the early industrialising countries of East Asia. In Taiwan and Korea, these zones were equipped with ready infrastructure and provided favourable business operations, productions and export conditions. They drew foreign investment and consequently boosted industrial production. As an easily imitable policy tool, the industrial zone soon spread to other economies in Southeast Asia, such as Thailand, Malaysia, the Philippines, and Indonesia (Kuchiki 2007). Vietnam is merely the latest to follow the trend. The General Statistics Office (GSO) of Vietnam

reports a total of 550 industrial zones and parks[2] in Vietnam, more than half of which are located outside of its two growth poles (see Table 5: Industrial zones and parks in Vietnam). Although plenty in numbers, the data in Table 5 shows that low occupancy rates plague almost all the industrial zones and parks in Vietnam, with the average industrial zone being two-thirds empty. A tenth of the Vietnamese industrial zones and parks that are located in the Mekong Delta also suffer from the lower-than-average occupancy rates (Table 5: Industrial zones and parks in Vietnam). Although it has been suggested that this land conversion for industrial use has negative social impacts[3] (Nguyen Thi Dien et al. 2010), plans for the further development of industrial zones and parks are undeterred: 459 million hectares have been designated for conversion to industrial zones, and the plan is to reach 881 million hectares. If the plans proceed, in the Mekong Delta, 30 million hectares of potentially fertile land would be converted to largely-empty industrial zones (see Table 5). The phenomenon of industrial zones in the Mekong Delta is a physical manifestation of the "there-but-not-quite-there" reality contrasting with the picture of definite industrialisation that statistics convey.

Table 5: Industrial zones and parks in Vietnam

	No. of industrial zones/ parks*	**No. of industrial zones**	**Area planned (ha)**	**Area claimed (ha)**	**Occupancy rate (%)**	**No. with sewage treatment (as %)**	**No. with solid waste management (as %)**
National	550	202	881.010.419	459.295.524	32,5%	72 (13%)	81 (15%)
Red River Delta	165	45	138.837.738	89.777.918	36,0%	20 (12%)	16 (10%)
Northern midlands	31	10	59.901.498	37.917.695	19,7%	1 (3%)	1 (3%)
North central, Central coast	174	45	310.632.105	132.538.371	26,0%	19 (11%)	27 (16%)
Central highlands	16	7	22.212.438	9.103.597	26,2%	0 (0%)	0 (0%)
South East	103	67	211.062.559	171.092.131	42,1%	28 (27%)	28 (27%)
Mekong River Delta	61	28	138.364.081	110.727.112	28,1%	4 (7%)	9 (15%)

Source: GSO 2008. *The General Statistics Office has lumped industrial zones with industrial parks in its statistical data, although they are legally distinct. See Footnote 2.

Environmental impacts of industrialisation on the agrarian Mekong Delta

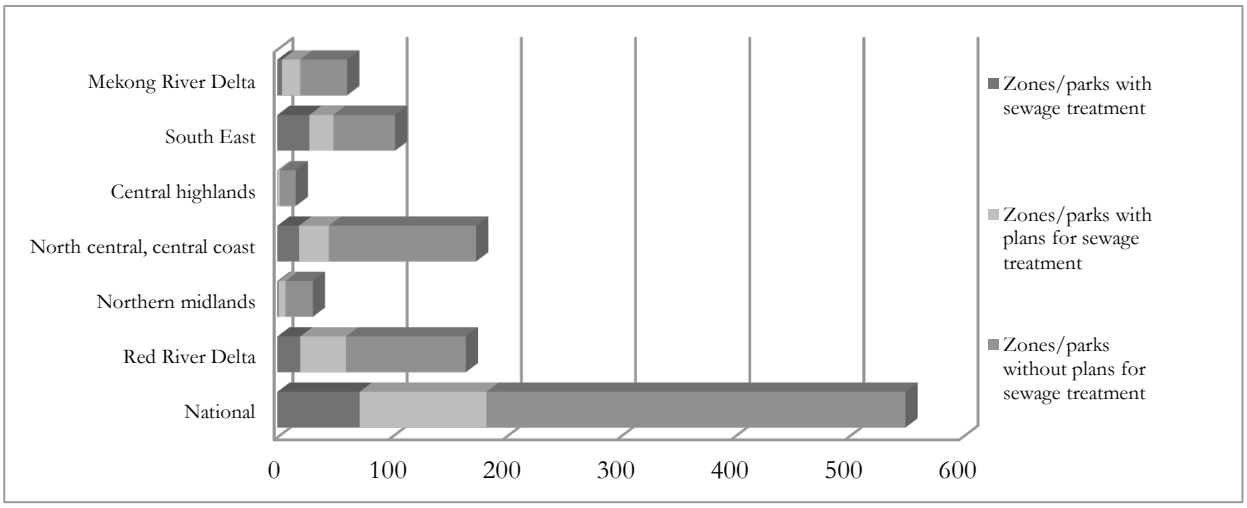
Nonetheless, the confluence of gradually increasing industrial production and the dominance of agriculture in the Mekong Delta lead to the inevitable question of how industrial pollution might affect agricultural production. This is a question of how rural industrialisation will affect Vietnam's food security: after all, until 1986, Vietnam had to import rice. It was the construction of dikes and new rice technologies that allowed the cultivation of three crops annually in the Delta, and this new availability of rice at stable prices has contributed to Vietnam's food security (Bosma et al 2005:58). Although the Mekong Delta is not on the radar as a pollution hotspot (ADB 2003; ICEM 2007b; WB 2010a), as of 2007, only 7% and 15% of the industrial zones and parks in the Mekong Delta have

[2] The terms industrial zone, industrial park, and industrial cluster tend to be interchangeably used in Vietnam, although the industrial zone and the industrial park are distinct entities. The industrial zone is a defined area (>50 ha) set aside for industrial manufacturing, with the purpose of attracting foreign investors, so it is managed by a provincial-level industrial zone management board. The industrial park (<50ha) is managed by the district-level people's committee where it is located, and serves the purpose of local industrial development and relocating scattered polluting enterprises in that district. See Chapter 3.1 for an elaboration on the types of industrial clusters in Vietnam, and an explanation for the large variations in reported statistics.

[3] This study in the Red River Delta suggested that land conversion for industrial use could threaten household food security while increasing non-farm employment and outmigration.

sewage treatment systems and solid waste handling systems respectively (Table 5: Industrial zones and parks in Vietnam). The country-wide situation is worse (Figure 2: Environmental protection in Vietnamese industrial zones), and the average of about 15% contrasts starkly with the set target of 50% in the country's 5-year socio-economic development plan[4], which increased to 60% by 2008 and to 65% in the 2009 socio-economic development plan[5].

Figure 2: Environmental protection in Vietnamese industrial zones



Source: GSO 2008

Their environmental impact has thrown them into the media and legislative limelight[6] (MoNRE 2008; NA 2011), but pollution control appears to be hampered by lack of information about the costs of pollution (Huynh Viet Khai and Yabe 2012), or information generally (Bui Ta Long et al. 2008). It has been observed that empirical studies on the effects of pollution on agricultural production have focused on intra-sectoral impacts than inter-sectoral industrial pollution-related impacts (Behera and Reddy 2002). This has also been the case in the Mekong Delta, where studies predominantly consider the effects of agricultural chemical pollution on agricultural productivity (Duong Van Ni et al. 2003; Nguyen Huu Dung et al. 1999; Toan et al. 2013); only one study considered how wastewater pollution from industrial zones led to rice productivity yield losses of 10-13% in Can Tho City of the Mekong Delta (Huynh Viet Khai 2011; Huynh Viet Khai and Yabe 2012). Additionally, there is also the environmental stress contributed by the boom in the aquaculture industry (Dang 2009; Pham Thi Anh et al. 2010b; Pham Thi Anh et al. 2010a), and pangasius fish breeding (Genschick 2013; Pham Thi Anh et al. 2010a). Herbst et al (2009) observed in Can Tho City that, due to a lack of wastewater treatment systems, all wastewater enters the canals and river untreated such that chemical and microbiological contamination is high, and surface and groundwater pollution are major environmental problems. But there is no detailed study on how these industrial activities will affect water volume and quality Delta-wide. The difficulty of such a study is due to the lack of primary

[4] Resolution 56/2006/QH11 of the National Assembly dated 29.06.2006 on the Five-Year Socio-Economic Development Plan 2006-2010

[5] Resolution 07/2007/QH12 of the National Assembly dated 12.11.2007 on the 2008 Socio-Economic Development Plan, and Resolution 23/2008/QH12 of the National Assembly dated 06.11.2008 on the 2009 Socio-Economic Development Plan

[6] The Ministry of Natural Resources and Environment issued a national report on environment in craft villages in 2008 (MoNRE 2008) and the National Assembly discussed the issue of environmental protection in craft villages and economic zones in 2011 (NA 2011).

data: there is no reliable monitoring of groundwater abstraction (Nuber 2009; Phu Le Vo 2007), industrial water use (ADB 2008:81ff; Le Quang Thong and Nguyen Anh Ngoc 2004:38), or industrial wastewater volumes (Klingel et al. 2012; Le Quang Thong and Nguyen Anh Ngoc 2004; WB Environment Unit 2010) and pollution loads (Bui Thi Nga et al. 2008). Figures used and given are based on estimations and projections (ADB 2008; ICEM 2007a; WB 2010b). What will happen in the Mekong Delta with more industrial zones and industrial production activities can only be answered by analogy from what we know about environmental protection in Vietnam generally.

The prognosis is not positive. Environmental protection rates since 1997 have decreased in all manufacturing industries in which foreign and domestic investors were able to invest (Mani and Jha 2006:7), and this nexus between trade liberalisation and industrial pollution has been observed at both firm and industry level (Pham Thai Hung et al. 2008). Industrial wastewater has become a much studied issue, approached from various angles. Scholars have considered industry-specific practices in the paper-making (Nguyen Mau Dung 2008), textile production (Nguyen Thi Phuong Loan 2011), shrimp farming (Pham Thi Anh et al. 2010b), fisheries (Nguyen Thi Van Ha et al. 2009; Pham Thi Anh et al. 2010a), and food-processing industries (Le Ha Thanh 2009; Le Van Khoa and Boot 1998; Tran Thi My Dieu 2003). Industrial wastewater has also been studied with reference to their production sites, such as craft villages (Dang 2009; DiGregorio et al. 1999; Le Thi Van Hue and Sajor 2011; MoNRE 2008; Nguyen Mau Dung and Tran Thi Thu Ha 2009) and industrial zones (Le Quang Thong and Nguyen Anh Ngoc 2004; Phung Thuy Phuong 2002; Tran Thi My Dieu et al. 2003). More holistic perspectives that cover a larger geographical area like a river basin (ICEM 2007b; WB 2010a) or the entire water sector (ADB 2009) have also been sought by studies funded by international organisations. Summarising this assortment of studies, the issues facing effective regulation of industrial wastewater appear to be: an ineffective regulatory framework due to gaps and overlaps, poor understanding of environmental regulations by the industrial producers, use of pollution-intensive production technologies, the limited capacity and financial resources of local enforcement agencies, the lack of financial resources of the industrial producers for constructing wastewater treatment plants and adopting pollution-minimising technologies, and low sanction sums for violations.

In short, regulation, capacity, and financing issues prejudice effective industrial wastewater management. In fact, the Ministry for Natural Resources and Environment surmised in its National Strategy for Environmental Protection 2001-2010 that there are "unresolved issues and weaknesses" such as: an incomplete legal framework with missing laws and guidance on implementation of existing ones; a system of environmental management agencies inadequate in numbers and capacity; ambiguous division of tasks and responsibilities; low public awareness for environmental protection; low and poor investments in environmental protection; and inadequate use of economic instruments (cited in ICEM 2007a:269).

Analyses of environmental management in Vietnam

This is also the general finding and verdict in the general literature on environmental management. The regulatory environment around wastewater (Nguyen Thi Phuong Loan 2010a, 2010b) and solid waste (Le Hoang Viet et al. 2009) has been found to suffer from poor implementation due to institutional fragmentation. Implementation problems by local governments can be traced to the conflicts and contradictions between laws, ordinances, and secondary regulations (Nguyen Thi Phuong Loan 2012:35) which manifest themselves most significantly in

overlapping authority, with various agencies being tasked with different aspects of management. For instance, the regulation of the environmental impact assessment (EIA) regime is a tug-of-war between the MoNRE and the Ministry of Planning and Investment (MPI). As a result, it is governed by two overlapping decrees, and the inconsistencies mean that projects can be approved before an EIA is performed (Tan 2004:189). The resolution of coordination of activities is the key to moving forward but also short in coming (Le Hoang Viet et al. 2009:272).

Unfortunately, even when the written law is unambiguous, implementation is by no means guaranteed. The example of the EIA tells this story of the gap between theory and practice, of failure linked not so much to imperfections in the process but lack of effective implementation (Clausen et al. 2011). This has been attributed to "structural barriers" entrenched in Vietnam's cultural, political, institutional and development planning context (Doberstein 2004:306). The public participation required for participatory planning is hindered by a lack of a participatory culture, weak notions of grassroots democracy and the Vietnamese respect for authority (Hostovsky et al. 2010). At the local level, planning is incohesive due to weak coordination across administrative boundaries and a high degree of personal political influence in informal decision-making; it is also marked by top-downism due to the significant political influence of the ruling party and the weak law-making structures (Tran Thi Huyen Trang 2011). This supports the critique that the application of such a "Western" technique is inherently illogical and not suited to its newer context (Turnbull 2004). Such a critique turns on the fact that context matters, and is largely supported by other findings. For instance, the adoption of river basin organisations, an icon of integrated water resource management promoted by donor agencies, has led to institutional confusion (Molle and Hoanh 2009) and ultimately, water management practices deviate from existing legal frameworks, policies and strategies based on these integrated water resource management principles (Waibel et al. 2012). This disjuncture between international mainstream and everyday local modes of water governance has also been observed with regard to the application of new water policies of "foreign provenance and international orthodoxies", such as water markets, water licenses, and permits; Do Thi Thanh Huyen (2008) traced it back to the polycentric complexities of Vietnam. The gap between policy adoption and implementation is well studied (Mai Tuyet Thi Vu and McIntyre-Mills 2008; Mitchell 2006; Ohlsson et al. 2005) and it appears to come down to the Vietnamese development priorities that constrain the integration of environmental objectives, since the development philosophy emphasises economic growth, and environmental protection is seen as something that can only be afforded after wealth accumulation or the attainment of middle-income status (Bass et al. 2010).

Given this gap between policy adoption and implementation, it is worth questioning the value and emphasis placed on state-led action or state guidance in environmental management in Vietnam. After all, Vietnamese plans have been observed to be deficient in integrating the local. Land use planning is top-down, and based on government-set targets, using multi-criteria evaluation approaches that are wanting in geophysical and social aspects (Nguyen Hieu Trung 2006) resulting in the neglect of local knowledge and participation (Pham Cong Huu et al. 2009). Official planning data tends not to reflect reality since they are based on negotiations than measurements, and the planned programmes are hence unlikely to materialise (Ohlsson et al. 2005). But even non-state regulation is not a

silver bullet. International industry standards such as the ISO14001[7] might have improved management, but it has not improved compliance and pollution reduction (Anh and Hens 2009). The adoption of cleaner production technologies depend nonetheless on encouragement from the government (Mitchell 2006) and policies such as fiscal rebates and incentives (Nguyen Thi Van Ha et al. 2009:1280). Even though various scholars have observed positive instances of local communities forcing industrial producers to change their production processes (O'Rourke 2002; Sikor and O'Rourke 1996), informal community-based regulation is likely to be affected by state action. The right to complain is only a constitutional right that is difficult to exercise because of the administrative structure of dual subordination – whereby local authorities are subordinate to both ministries and central-administrative authorities – that has led to unclear division of responsibility in processing complaints that allows for too much interpretation on the part of the implementing bodies (Buhmann 2007; Hoang Ngoc Giao et al. 2009). This brings us to the point where the Vietnamese state ultimately retains a central role in improving and achieving effective environmental management. Legal regulation, implementation, financing, capacity challenges, and even community regulation depend on the workings of the state.

Although the existing studies have alluded to various structural aspects of the Vietnamese state, these are usually explained as barriers to more effective management. One would be thus prone and justified to think of it as a weak state with governance and capacity issues. This shortcoming is partially due to the fact that the structural barriers are not better – specifically, historically – contextualised. It can be observed of the early European industrialisation experience and the East Asian "newly-industrialising countries" (Korea, Japan, and Taiwan) that their growth trajectories are characterised by the prioritisation of economic growth over environmental protection. It has been suggested that the first wave did it out of ignorance, and the second wave did it to play catch up, but *all* developing countries have sacrificed their environment for economic growth (Yearley 1994). Vietnam is not an exception.

Additionally, the identification of structural barriers to environmental protection or sustainable development is not linked to the creation or purposes of those structures. For instance, state class theory argues that underdeveloped and heterogeneous societies are ruled by a bureaucratic elite (political leaders, the upper segment of development bureaucracies) – a state class – that seeks to enrich itself by building a rent-economy. The state class uses techniques such as centralisation, the establishment of monopolies, and inner segmentation, to ensure that underdevelopment prevails, as a powerless lower class is unlikely to overthrow the existing and inequitable system of wealth allocation (Elsenhans 1997). It has also been argued that the pervasive hierarchical state apparatus in the Soviet (and other third world) context is due to its equation with a 'social mechanism of planning', which is the combination of the logic of socialist aims, underdevelopment, and radical nationalism[8] (Senghaas 1981 cited in White 1988:14). The bottom-line is that structures, or structural barriers, have functional or ideological bases.

[7] ISO, the International Organisation for Standardisation, develops and publishes international standards for various subject matters, such as quality management, environmental management, social responsibility, energy management, risk management, food safety management, amongst others. The ISO 14001 deals with norms for environmental management.

[8] The socialist aims are: class transformation, rapid accumulation, and planned economy. Underdevelopment is used in the sense of low savings and technology, scarcity, weak manpower, and economic dependence.

The structural barriers to effective environmental protection can serve ideologies, state functions, or certain groups. Attempts to classify and understand Vietnam as a developmental state[9], in the mould of the East Asian "newly-industrialising economies" (Korea, Japan, and Taiwan), has led to the suggestion that Asian industrialisation is about "industrialisation per se" (White 1988:6) and not other economic principles or social welfare. In the case of Vietnam, this is also reinforced by its ideological or cognitive baggage. The traditional socialist economy emphasised output growth, out of a desire to demonstrate the superiority of socialism vis-à-vis those developed countries with whom it sought to catch up and was "capable of generating very high levels of environmental damage" under the auspice of "rationally planned" resource use[10] (Beresford and Fraser 1992:10). Beresford and Fraser (1992) observed that the transition to a market-oriented economy could further strain the system's ability to minimise ecological damage. For instance, the decentralisation of decision-making power, and thus increase in the relative autonomy of local authorities, might allow "autarkic political networks of self-interest which grew up within ministries and/or provinces under the traditional system" to undermine reform over resource allocation, perhaps even through the accumulation of capital in public hands, and the setting up of "petty empires impervious to central control" (Beresford and Fraser 1992:14). Thus, Elsenhans' theory of a rent-seeking bureaucratic elite that seeks to perpetuate marginality to preserve its position as a state class, provides this insight: the "structural barriers to environmental protection" in Vietnam (such as a development philosophy that prioritises the economy over the environment) can also be interpreted as techniques through which the current ruling elite (both at the central and local level) profited and seeks to continue profiting from the exploitation of natural resources.

The missing Vietnamese context in analyses of environmental management in Vietnam

The previous paragraphs have sought to make the point that the literature on environmental management in Vietnam is missing an engagement with the structure and nature of the Vietnamese state. This is offered by the general literature on Vietnam studies. Although the body of work is marked by dichotomous binaries – strong state-weak state, central-local relations, formal-informal divide, public-private divide, North-South differences (Taylor 1998), and state-society relations – it has also been unable to put Vietnam in either categories.

The state apparatus of the Socialist Republic of Vietnam is organised according to a tripartite separation of powers (Figure 3: The Vietnamese political system based on its constitution). The government, headed by the Prime Minister, comprises 18 Ministries[11] and, as of 2014, 63 Provincial People's Committees ("PPC"). The National

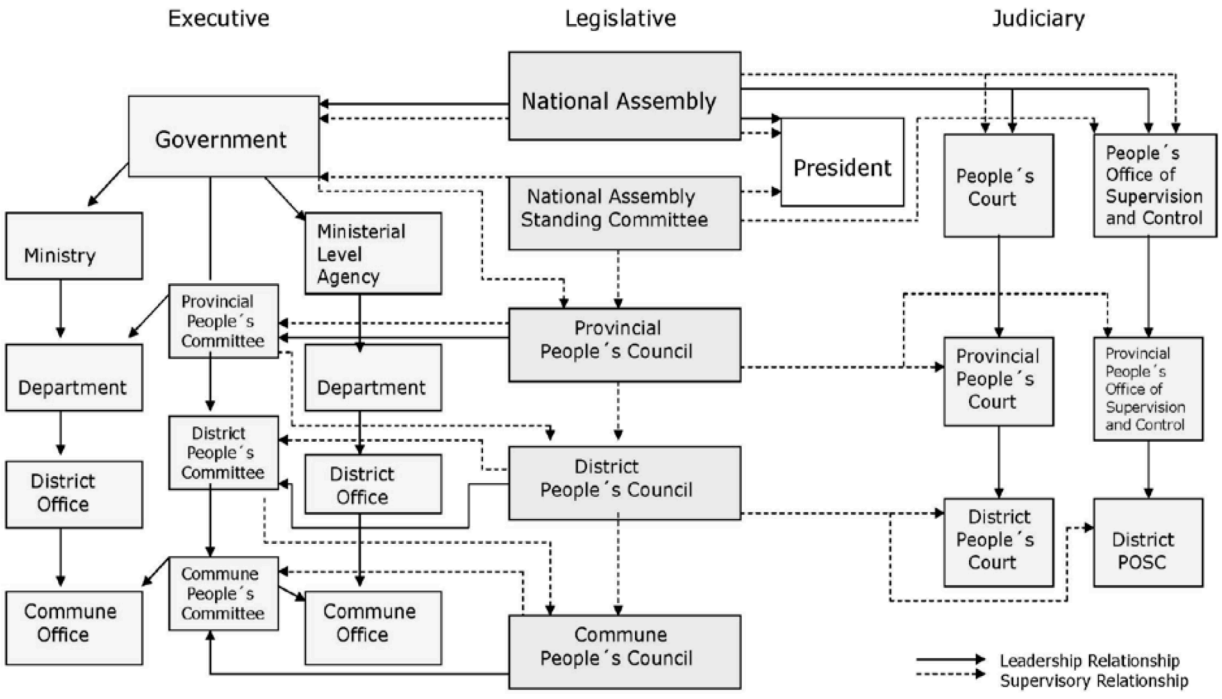
[9] Johnson (1982) first used the term "capitalist developmental state" to explain Japan's successful industrialisation despite apparently contradicting the neoliberal prescriptions of minimal state intervention in the market. The "developmental state" prioritises economic development, and defines it in terms of growth, productivity, competitiveness (instead of welfare). It looks to other economies in order to derive goals from comparison, and find models to copy. It governs the market by being "committed to private property and the market, and limiting its interventions, but guides the market with instruments formulated by an elite economic bureaucracy". Such a state is also "engaged in numerous institutions for consultation and coordination with the private sector, and uses these consultations as a basis for policy formulation". Politicians are important as a buffer, so that "state bureaucrats rules but politicians reign". A soft authoritarianism and a virtual monopoly of political power in a single political party allows this separation between rule and reign, the maintenance and prioritisation of economic growth over other claims. (Johnson 1982 cited in Wade 1990:25-26)

[10] At the third Party Congress in 1960, the Vietnamese additionally conceptualised a "triple revolution" in the forces and relations of production, culture, and science and technology in which science and technology's role was seen as purely productive, without consideration of its potential negative social and environmental effects (Beresford and Fraser 1992:10).

[11] National defence; public security; foreign affairs; justice; finance; transport; construction; education and training; agriculture and rural development; industry and trade; planning and investment; health, science and technology; natural resources and

Assembly ("NA"), its Standing Committee, and the People's Councils make up the legislature, and the judiciary is a system of People's Courts and offices of supervision. While this tripartite separation of powers is a product of the reforms taken under the auspices of the *Doi Moi*, the vertical division into the four layers of centre, province, district, and commune dates back to colonial times (Marr 2004:41 cited in Waibel 2010:13). This combination means that every organisation at the central level has corresponding subordinates at the other levels. A Ministry has a Department at the provincial level, a Division at the district level, and an Office at the commune level. The People's Committee, People's Councils, and People's Courts also follow this subdivision logic. Dual subordination is needed as an operating principle in this vertically reflected horizontal structure where there is the same set of functional actors at each administrative layer. Every actor has vertical and horizontal reporting obligations: the Department reports to both the Provincial People's Committee and the Ministry. But the appearance of a designed structure belies elements of fluidity.

Figure 3: The Vietnamese political system based on its constitution



Source: Waibel 2010:12 based on Fforde and Associates Pty Ltd (2003:58)

While this state administration structure connotes a degree of fixity, its constitutive administrative boundaries and scales are not. The new emphasis on the rule of law during Vietnam's transition from central planning to market economy led to the reconsideration of the number of administrative tiers and the redefinition of the relationship between the central government and the local governments at all levels (Vasavakul 1999). As part of the reform process, large and densely populated provinces have been broken down into small provinces, and the number of provinces have doubled from 38 in 1978 to 61 by 2009 (Waibel 2010:16). The constant readjustment of administrative units also happens at the sub-provincial level, with the important implication that decision-making powers are shifted, units changed, staff and infrastructure moved, and resource allocation contested. The re-design

environment; Information and communications; home affairs; labour, war invalids and social affairs; culture, sports and tourism

and re-organisation of the political space also reflects the malleability of space and the use of law in that process (Vasavakul 1999).

The design and appearance of the administrative structure also conveys the impression of a strong central state. Administrative and fiscal decentralisation measures have been undertaken, and reform has become a constant (Waibel 2010), but the empowerment of provinces and the ensuing independence has led to "self-governance" that impedes the translation of national policies in a consistent and uniform manner (Joint Donor Report to the Vietnam Consultative Group Meeting 2010). Although "top-downism" strongly characterises the development and communication of national plans by the central government, implementation ultimately happens locally and thus cannot be guaranteed. Several Vietnam scholars have therefore noted that the central state is in fact a weak one (Gainsborough 2004; Koh 2001b), much in contrast with the picture of an ominent State-Party (Koh 2006), easily begotten with the dominance of plans and planning documents, and the profusion of legislative documents with its new commitment to the rule of law.

It must be noted that there is no consensus on the nature of Vietnam's political system, its hierarchisation and rigidity. Hierarchical social and political structures would preclude flexibility. But, as some scholars have argued, the institutional structures of Vietnam have survived in a one-party Communist system through the 1990s and into the new century (Fforde and de Vylder 1996 cited in Adger 2000). Hence, both the Communist party and the local manifestations of the state have demonstrated flexibility in decision-making despite the tensions between these institutions at different levels (Kerkvliet 1995 cited in Adger 2000). It has also been argued that the multilayered state management system of departments and agencies is not so much hierarchy than horizontality and a system of polycentric power sharing with semi-independent bodies[12] loosely connected to a weak centre (Painter 2003a:18). There are no uninterrupted hierarchies, but rather overlapping structures, since the head of a provincial administrative department in a line ministry is under the command of both the national ministry and the provincial senior officials. The polycentrism is due to a fragmentation of control, because of the wide dispersal of rule-making authority and discretionary powers (Painter 2003a). Hence, the Vietnamese political system has been characterised as formal and lacking central authority (Fforde 2008).

The contradictions of the Vietnamese state have interested many, and the various aspects of reforms have been useful laboratories for observations. The economic reforms under the renovation (*Doi Moi*) have been a petri-dish for theorisation about the nature of the State. Privatisation, or equitisation as it is referred to in Vietnam, positions Vietnam as being the latest in a series of developmental states in East and Southeast Asia, whereby the state controls the process of opening up its markets. But it was observed early that Party policies for economic reforms were so idealised as to be not implementable (Fforde 1986). This has been supported by Painter's inspection that revealed an unexpected fragmentation of control, largely foisted by the dispersal of rule-making authority and discretionary powers (2003a:19) through the establishment of organisations, with task-specific mandates, which fall outside of the state administrative structures. Both accounts strongly challenge the perception of an authoritarian Vietnamese state with control over its engineered policies. Actual economic success is also hardly

[12] The reasons for such a large number of administrative units are the legal independence, budgetary bargaining power, fee-charging opportunities that come from being a department rather than a sub-department (Painter 2003a)

proof of successful reform. Under this "veneer of reform" is institutional particularism: Gainsborough (2002a) discovered that it was not so much well-enforced property rights, but state-owned enterprises' preferential access to resources that accounted for economic performance. Despite all formal appearances of economic reform, the business sector is characterised by a high degree of informality and the importance of connections (Malesky and Taussig 2009; Tenev et al. 2003). Yet, a lack of transparency and an absence of clear boundaries could also be interpreted as a form of government (Gainsborough 2005), as Vietnam has navigated its economic transition despite the verdicts of unintentional results (Fforde 2005). Through their examinations of aspects of economic reform, this body of work thus shone light on the other side of the apparently strong central state: rule-making authority is fragmented than concentrated, policies are not guidance, informal relations and solutions are rife and the public-private divide is unclear.

Local government and their implementation of central policies has also been fertile ground for theorisation about the state. "The emperor's law stops at the village's gate" is an oft-invoked idiom to explain Vietnamese politics (Pike 2000) which has been used to explain poor implementation of central policies (Do Thi Thanh Huyen 2008; Waibel et al. 2012:174). In this view, the Vietnamese state had always been a decentralised state, even before the administration reforms began (Beresford 1995:10 cited in Kerkvliet 2003:31). This has been seen as a matter of the state's insufficient resources and capacity to coordinate programmes and implement policies (Thrift and Forbes 1986 cited in Kerkvliet 2001). There was no devolution with decentralisation, and hence, structural constraints vary depending on location and local administration and its weaknesses (Fforde and Associates Pty Ltd 2003). Moreover, the "fence-breaking" events in the South of Vietnam, where provinces openly ignored central agricultural policies, which were tolerated by the central state and eventually led to significant policy change (Angie Ngoc Tran and Smith 2005; Heberer 2005) allowed the inference that social groups and processes are not under state control and that the apparently dominating, top-down, central state is responsive to pressure from below (Beresford 1989:116-8 cited in Kerkvliet 2001). Thus, Kerkvliet (2001) concludes that there is considerable evidence for three main interpretations of the nature of the Vietnamese state: the Party and state agencies hold power over policy-making, implementation, and societal organisations and is a "dominating state". But the Vietnamese people are also able to influence what state agencies do, through official organisations which act as a channel, but also mobilise support for the state; this is the "mobilisational corporatist state". There is also support for the "highly decentralised and dialogical state", in which social forces, groups and individuals outside of official state-endorsed channels can effect change.

These may first appear to be sociological or slightly political scientific observations with no bearing on the question of environmental management. Indeed, environmental management has also not formed a case study for any of these authors. But these conceptualisations of the Vietnamese state matter; the type of state likely to achieve run-of-the-mill standard prescriptions of monitoring and enforcement or legal frameworks without gaps is a state that has not been observed. The state administrative structure is generally acknowledged by studies on environmental management in Vietnam, albeit in a perfunctory manner. None of them explicitly deal with how decision-making powers and others are passed along the command chain, and how this specifically affects the monitoring and enforcement at the local level. Hicks (2005) rightly observed that most literature focused on the two extremes of central-local relations. What is the extent of local experimentation as opposed to central regulation – on which

calls for a tighter legal framework is based – in the field of environmental protection and management? Existing works focus largely on agricultural policies. With a few exceptions (O' Rourke 2002; Sikor and O'Rourke 1996), little is known about how society deals with environmental management failures, and how much of this goes back to attitudes towards state environmental regulation. Also, the reviewed literature on environmental management does fall on either end of the continuum: objects of analysis are either oriented around central government and its policies, or local communities. The roles of the provincial and district governments are barely explored, despite the often-mentioned need for implementation. How has decentralisation affected environmental reform? Observations of informality (Gainsborough 2002b; Luttrell 2005; Pike 2000; Tenev et al. 2003) also raise questions of how proximity to the State affects the likelihood that an enterprise would observe environmental protection laws. These political scientific observations point to a weakness in existing studies of environmental management in Vietnam: they tend to assume implementation or "implementability".

Moreover, the role of the law in Vietnam is misunderstood by those who argue for the need for reform and the rule of law. To begin with, the Vietnamese legal system in its current Westernised form is young; the law-based state doctrine (*nha nuoc phap quyen*) was introduced in 1991 (Gillespie 2005:66) but its concepts about the place and role of law have not replaced the preceding socialist legality doctrines or eliminated the Communist Party's powers to substitute policy for law (Gillespie 2007:150). As such, with the state's focus on technical than qualitative legality (Buhmann 2007:251f), it has been opined that there is only a very thin concept of rule of law (Peerenboom 2004), or even no concept of rule of law in Vietnam (Nicholson 2005:167). Fforde's (1986) early observation that the law in Vietnam is the instrument of the Vietnamese Communist party has been repeated (Gillespie 2005:47f). Rather than reflecting state policy direction, it reflects the political agenda. Because the law is the instrument of the party, its function is state economic management: an overwhelming 80% of Vietnam's laws deal with its economy (Bui Thi Bich Vien 2005). How does the Vietnamese society then understand the function of the law? Pertinent to the environmental management question is then: how does the Vietnamese society that is used to law mainly regulating the economy, react to laws designed to achieve environmental protection? There are no studies on how the Vietnamese populace regards environmental protection laws, although this has not stopped Western-trained scholars from asserting that better regulation is needed. Calls for a leak-proof legal framework for environmental protection additionally miss the point that existing laws might be deliberately ambiguous (Hibou 2004 cited in Gainsborough 2005:23f). Lower level officials doing real implementation work are often faced with numerous, sometimes conflicting decrees and circulars, that enjoin instant action and leave room for continued inaction and discretionary interpretation (Painter 2003a:19). Vietnamese news coverage of environmental pollution cases confirms this problem of ambiguously defined mandates (VietNam Net Bridge, 02.10.11, Viet Nam News, 30.09.11). Thus, what is already known about the role and function of law in Vietnam throws light on the reasonable doubtfulness of any endeavour seeking more clearly defined laws in the hope that this might improve environmental protection.

Problem statement: Reintroducing the Vietnamese context into environmental management analysis

The above discussion makes the point that the analyses of environmental management have not fully integrated observations made about the nature of the state and its workings. Common analyses of environmental management

in developing countries have been criticised for failing to contextualise and refer to the social, political, and economic situation (Turnbull 2004). Although the literature on environmental management in Vietnam does reference the structural features of the state, such as the administrative organisation and its institutional fragmentation and capacity issues, these are arguably taken at face value. Particularly, the gap between policy and implementation as a main finding does not seem to influence the conclusions made; most of the studies end with calls to improve implementation by resolving the regulatory-financing-capacity issues, without reflecting on the nature and workings of the Vietnamese state produced by the literature on Vietnam's political economy. Environmental management analyses in Vietnam clearly stand to benefit from a better integration of the social-political-economic context, both locally and nationally.

1.2 Research objectives and research question

The importance of this work lies in its pre-emptive nature. The implication of increasing industrial output in the Mekong Delta is that industrial water use and consequently industrial wastewater are upcoming environmental issues. As yet, there is no primary data on industrialisation, industrial zones, and its effects on water consumption in this agrarian region. With one exception[13], there is no primary data on industrial wastewater from industrial zones in the Delta. Through the focus on industrial zones, this work aims to examine one aspect of this rural industrialisation, and its effects on water. The empirical research objective is to find out how industrial wastewater in the industrial zones of Mekong Delta is managed.

The results of the review of current literature determined the other, theoretical, research objective, which is to use this instance of environmental management analysis in a way that integrates the micro and macro-Vietnamese context. I criticised the existing explanations for their failure to account for, and dig into the context; without pre-existing exploration of possible explanations to be found in the context, I intend to work with the data in an inductive manner. I thus see my work as of an explorative nature, although explanation would be a welcome secondary outcome. As such, the work is in the first instance descriptive and primarily explorative. Thus, the main research question of this dissertation is:

"What is the state of wastewater management in the industrial zones of the Vietnamese Mekong Delta, and are there more contextualised alternatives to the common explanatory narrative of capacity, financing, and legal issues?"

[13] Can Tho's Tra Noc industrial zone has attracted some scholarly attention. Nguyen Thi Phuong Loan (2010)'s work on wastewater in Can Tho City touches briefly on some aspects of wastewater from the Tra Noc industrial zone. Bui Thi Nga (2008), Huynh Viet Khai (2011, 2012), and Wilbers (2013) have performed some water quality measurements around Tra Noc.

1.3 Operationalisation of the research question: the analytical framework

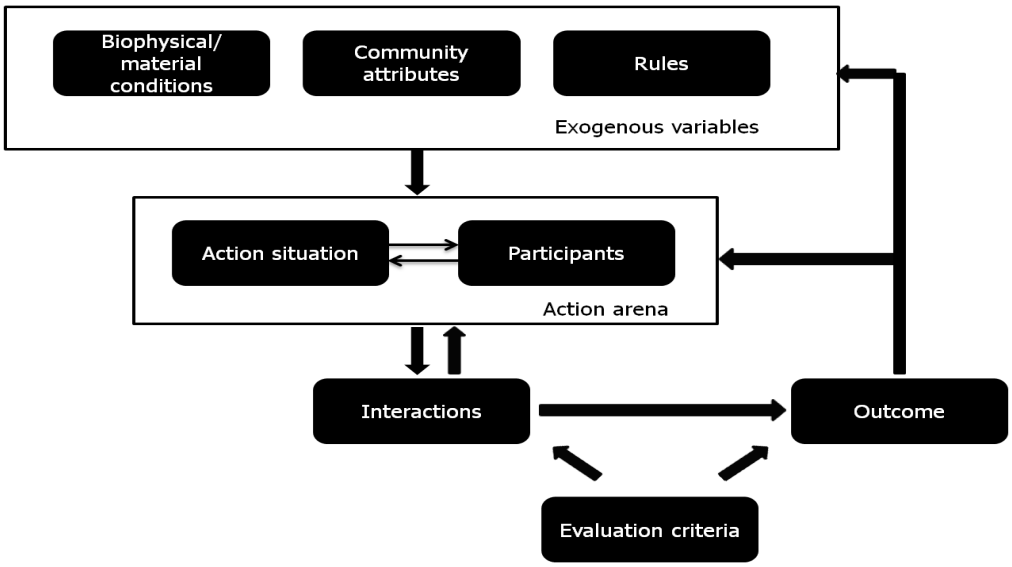
Having (i) noted that several works referred to "institutional fragmentation" as an explanatory catch-all to explain Vietnamese environmental management failures; (ii) shown how the existing literature on environmental management in Vietnam is impoverished by the failure to consider peculiarities of the Vietnamese context; and (iii) decided on an inductive research strategy that would allow the empirical data to guide my exploration of what the missing Vietnamese context might be, I thus identified an institutional analysis, particularly the Institutional Analysis and Development (IAD) Framework (Ostrom 1998, 2005), as a heuristic framework to operationalise the research question. This section first considers what an institutional analysis entails, and how the IAD Framework is different. After explaining the details of the IAD Framework, I go on to explain how it is particularly suitable for my research agenda and empirical subject.

Institutions have been variedly defined and their definitions depend largely on the theoretical orientation of the author invoking the term. The Oxford English Dictionary definition first points to organisations, and then to established laws or practices. Some theoretical definitions cast the analytical web wider. For instance, institutional economists define them as humanly devised constraints that structure human interaction comprising formal constraints, informal constraints, and enforcement characteristics (North 1990): institutions can mean anything from rules, laws, constitutions, norms of behaviour, conventions, to self-imposed codes of conduct (North 1990). Institutions are not only legal, political, administrative structures and processes, but also formal and informal rule systems, context, and social relations of power (Beveridge et al 2012). What the diversity of definitions shows is that there is acknowledgement that actors are influenced by their environments, and that to understand actions, there must be an engagement with the context that actors are embedded in. But this "institutional turn" has different – thematic, epistemological, and ontological – motivations (Jessop 2001), and depending on the objectives and intentions of the investigator, an institutional analysis reaches different depths in detail and conclusions, and validity and usefulness (Aligica 2014:99). On one end are analyses more akin to a regulation and organisational set-up mapping; on the other end are the empirically extensive analyses that recognise other non-written non-state derived sources of rules (Crawford and Ostrom 1995), such as beliefs and norms (Weisbuch 2000), or focus on non-organisational organised forces such as civil society (Kathuria 2007). One way of reconciling the confusion ensuing from the interchangeable use of the terms institutional frameworks, theories, and models in the social sciences is to see an institutional analysis as essentially a *metatheory* about governance and collective action (Aligica 2014:99), that rejects reductionism (Schneiberg and Clemens 2006) and recognises that behaviour of organisations and states are not to be attributed to an aggregate of behaviour, but rather, contextual factors (Schneiberg and Clemens 2006).

The Institutional Analysis and Development (IAD) Framework is different in that it is first and foremost a heuristic device, and not a theory. While the function of a theory is to diagnose a phenomenon, explain processes and predict outcomes, the function of a framework is to help identify elements and the relationship among elements. The Ostroms who elaborated the IAD Framework see it as belonging to the "context of discovery" rather than the "context of justification": the IAD is concerned with the notion of heuristics, of procedures and methods of learning and discovery (that are unfortunately downplayed in contemporary social sciences) and not the procedures

by which the truth value of propositions is tested empirically (Aligica 2014:99). Because the IAD is a tool, it can be adapted to the specificities of the empirical subject or theoretical interest. For instance, Rudd (2004) incorporated indicators used in fisheries management, and Imperial and Yandle (2005) incorporated evaluation criteria for sustainable management of fisheries. Clement and Amezaga (2008) modified the IAD to integrate local factors such as local narratives, actors' perceptions, and local history. Myint (2005) adapted the IAD into an IAN (issues, interests and actors network) in order to incorporate a policy science approach; and the IAD has also been mixed together with other research methodologies, such as discourse analysis and historical approach (Clement 2010). The IAD offers, as a heuristic device, "the sketching of institutional details with precision and clarity" with its rule-based perspective and its logic of multileveled action that take analysts beyond the top-down and bottom-up debates that plagues implementation research (O'Toole Jr 2000:274).

Figure 4: The IAD Framework



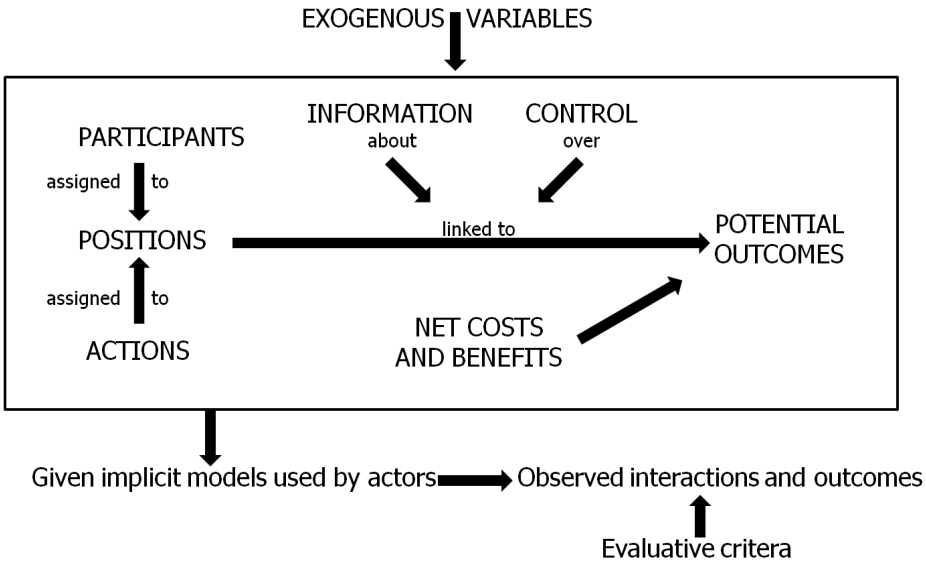
Source: (Ostrom 2005:15). The action arena, exogenous variables, and outcome form the three critical analytical elements .

The Institutional Analysis and Development (IAD) Framework focuses on how rules, physical and material conditions, and community attributes shape action arenas and the incentives faced by individuals, and how these conditions combine to determine outcomes (Ostrom 1998). Figure 4 ("The IAD Framework") provides a schematic representation of these building blocks of the IAD. The basic units of analysis are **action arenas**, which are social spaces in which actors – individuals, or groups functioning as a unit – interact and make decisions based on information about the different costs and benefits of actions and outcomes and how actions are linked to outcomes (Imperial 1999). The actors/participants and the action situation (see Figure 5: Internal structure of an action situation) in these action arenas depend on and are structured by other deeper features such as the rules used by participants to order their relationships, the states of the world acted upon in the arena, and the structure of the general community within which the arena is placed (Kiser and Ostrom 1982). This is the **institutional environment**, and is collectively referred to as exogenous variables in Figure 4 and Figure 5.

There can be various action arenas, which might overlap with each other. As such, actors may become participants in various arenas. Actors are to be understood broadly as individuals, or groups functioning as a unit (such as a corporate actor), whose behavioural choice is relevant to the outcome of an action situation. Their behavioural

choices are structured by rules. The IAD understands rules as patterned behaviours of a social group, evolved over a period of time in order to govern human activity. Thus, rules can be formal or informal, and include statutory rules, socially-embedded rules, and shared strategies, but also informal "working rules" (see "working rules" in Table 6: Definition of terms used in IAD Framework). These working rules establish who may be a participant and what roles s/he may assume; they specify action possibilities of actors, the amount of information available to them, and their levels of control over outcomes; and they also determine the benefits and costs of the actions that can be taken by participants (see Figure 5: Internal structure of an action situation). However, the same rules can lead to different outcomes in different action arenas if exogenous variables like physical conditions differ; sometimes physical conditions determine rule configuration, and strategies available to players. The IAD Framework has been consistently further developed over four decades by the Ostrom Workshop in Political Theory and Policy Analysis at Indiana University[14] through extensive empirical application and testing. This very brief overview of the IAD Framework merely introduces the basics.

Figure 5: Internal structure of an action situation



Source: (Ostrom 2005:33). The internal structure of an action situation is structured by working rules that establish who the participants are, their positions or roles, the actions they may take, the amount of information they get, the control they can exercise, the benefits and costs of the actions they take.

Although I have explained how the IAD is first and foremost a heuristic device, it has also been associated with and applied predominantly to the evaluation and design of institutional arrangements for common pool resources management problems. Common pool resources (CPRs) are goods and services provided by nature, which are subtractible and non-excludable: one user's consumption would decrease the units available for consumption by other users, and yet it is not possible to exclude other users from consumption. Examples of CPRs are fisheries and forests. Water quality, technically a characteristic of water, has CPR characteristics: it is difficult to exclude people from appropriating water quality, and once a user pollutes, there is less quality available to the other users (Sarker et al 2007:462). But industrial wastewater pollution is not a case study object for CPR theorists; water

[14] The Vincent and Elinor Ostrom Workshop in Political Theory and Policy Analysis is a research centre of Indiana University Bloomington. See: http://www.indiana.edu/~workshop/ (last accessed 01.11.14)

quality problems[15] are typically treated as externalities (Dahlmann 1979, Lehmann 2010) rather than common pool resource issues. As externalities, they are dealt with through government regulations, monitoring, imposition of penalties, or market-based instruments (Sarker et al. 2007:462), which has had some success with point source pollution. But, it is already known that the market-based instruments have not worked in the Vietnamese context (Le Ha Thanh 2009; Le Quang Thong and Nguyen Anh Ngoc 2004; Nguyen Mau Dung 2008; Nguyen Thi Phuong Loan 2010b); to continue to analyse point source wastewater pollution as an externality that is best dealt with by using market-based instruments would not shed any new light on the problem. Mahanty et al (2014) take a similar approach: they considered sustained increase in levels of pollution as a sign of the failure and limitations of a polluter-pays approach; wanting to take a broader approach to analysing the causes of pollution, they draw from CPR research and re-conceptualise wastewater pollution as water quality and a CPR. Paavola (2007) correctly points out that institutional analyses of environmental governance implicitly assume that governance is what is achieved without the state, and focuses on CPRs, but that there are many environmental resources that do not possess these two attributes. Thus, the common association of the IAD Framework with CPRs is not a hindrance to my choice of the IAD Framework for structuring my exploration of water management practices of industrial-economic actors in the Mekong Delta, and specifically, understanding why the outcome is negative despite rather positive physical and material conditions of clustering for costs-sharing.

Table 6: Definition of terms used in IAD framework

Term	Definition
Action arena	Set of variable including the action situation, actors, structural rules, community attributes, and the material conditions that shape the action arena.
Actor/ Participant	Individual, or group functioning as a unit, whose behavioural choice is relevant to the outcome of an action situation. Participants are the relevant actors in an action arena. Each action arena has a different set of actors, and an actor can be active in several arenas. Thus an actor is not always a participant.
Action situation	Structure that includes immediate choices and outcomes, described by (a) set of relevant actors, (b) each actor's set of allowable actions as defined by the rules, (c) each actor's information about the action situation, (d) outcomes that can result, (e) technologies or links by which actions determine outcomes, (f) costs and benefits of actions and outcomes for each participant
Community attributes	Behavioural norms, level and nature of common understanding shared by potential participants, extent to which those living in the community have homogenous preferences, and the distribution of resources. This whole bundle is labelled "culture" by some.
Outcome	Determined by the rules, states of the world, and the nature of the community
Rules	Specify what is required, permitted, or prohibited.
Working rules	Informal rules that structure the action situation, which participants refer to in their actions. There are seven types: (1) entry and exit rules determine the number of participants, their attributes and resources; (2) position rules establish the roles in a situation; (3) scope rules delimit the outcomes that can be affected and the actions linked to specific outcomes; (4) authority rules assign sets of actions that participants may or may not take; (5) information rules affect the contingent information of the participants; (6) aggregation rules affect the level of control that a participant in a position exercises in the selection of an action; and (7) payoff rules determine the benefits and costs assigned to particular combinations of actions and outcomes. They establish incentives and disincentives.

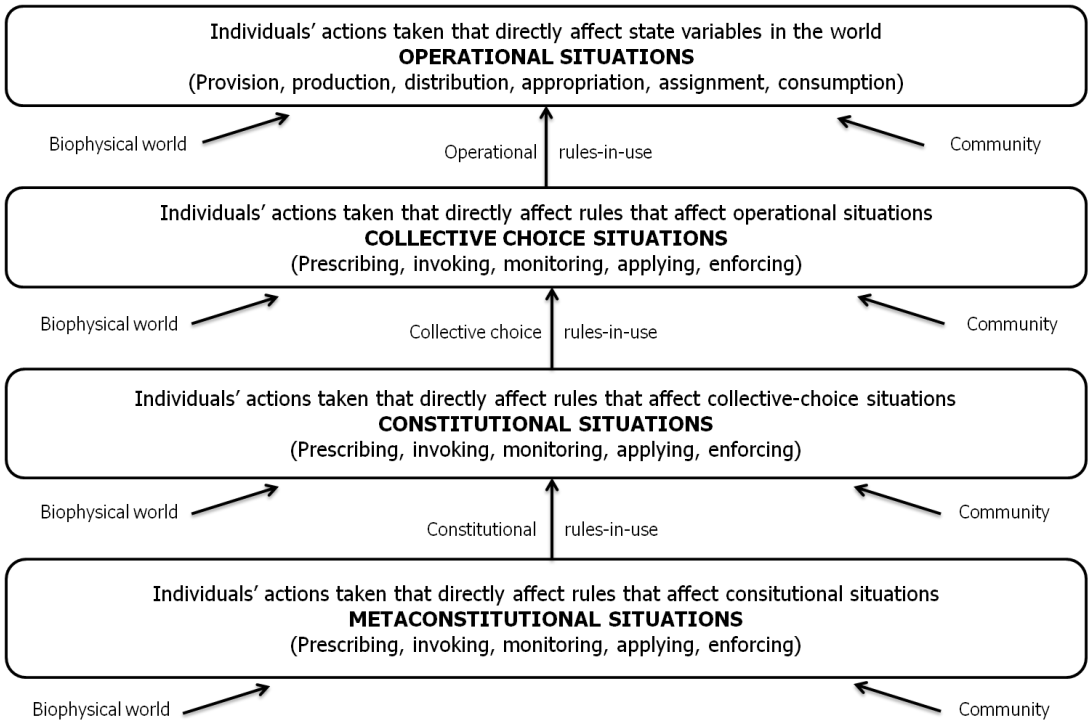
Adapted from Ostrom (1998)

I have identified the IAD Framework as being the appropriate heuristic device because existing studies on environmental management failures in Vietnam invariably point to the institutional set-up. The literature points to institutional failures, institutional fragmentation, or institutional weaknesses, despite the authors having used

[15] Because water quality has CPR characteristics, diffuse source pollution *has* been examined through CPR lens. See for instance Sarker et al 2007.

different analytical methods and their reference to different things with their findings. By choosing to perform an institutional analysis, it could be possible to investigate and verify the claims of institutional weaknesses. Second, I criticise the failure to incorporate the context. Certain attributes of the IAD make it additionally useful for analysing the institutional arrangement around industrial wastewater management in the Mekong Delta. The first is its focus on rules rather than policies, and the recognition that rules are nested and need to be analysed at multiple levels of analysis. This broad conception of rules is suited to studying wastewater management in Vietnamese industrial zones since the deviation from the statutory rules has been observed (Nguyen Thi Phuong Loan 2010), and the existence of informal rules would benefit our understanding. The IAD framework engages multiple levels of analysis to understand how formal and informal rules interact (Figure 6: Levels of analysis and outcome in the IAD Framework) (Imperial 1999). The operational level is where individuals make choices that directly affect the resource in question. Collective decisions about operational rules are made at the collective choice level, and decisions on the authority of collective actors are made at the constitutional level (Paavola 2007). The operational, institutional, and constitutional levels refer not so much to the vertical structure of governance solutions, than to institutional functions (Paavola 2007). Thus, engaging multiple levels of analysis might also test the thesis of hierarchisation in the Vietnamese state administrative system, and whether this top-downism is the reason for poor implementation. The second is its attention to contextual factors. Since the IAD framework also takes into account contextual factors, such as physical, socio-economic and cultural factors, it allows this research to bring in the physical features of spatial concentration in an industrial zone, and potential inter-firm linkages as cultural factors for understanding the behaviour of the actors.

Figure 6: Levels of analysis and outcome in the IAD Framework



Source: (Ostrom 2005:59)

However, since this work intends to employ the IAD as a heuristic tool for data collection than for policy recommendations, the element of "evaluative criteria" was not considered. Evaluative criteria include: (i) the types

of transaction costs associated with the development and implementation of the policy actions, such as information costs of searching for and organizing information, coordination costs invested in negotiating, monitoring and enforcing agreements, as well as strategic costs resulting from asymmetries in information power and other resources (Imperial and Yandle 2005:504); and (ii) the assessment of institutional performance using criteria such as efficiency, equity, accountability, and adaptability (Imperial and Yandle 2005:504).

Using the IAD framework to operationalise the main research question and direct the field research process would thus entail the identification of:

- The activities that influence the outcome of wastewater management in industrial zones, *i.e.*, the action arenas
- The individuals, groups, or organizations whose actions and behaviour are relevant to the outcome, *i.e.*, the actors or participants.
- The rules that have structured and structure the practices around industrial water management, including the formal and the informal such as social norms or shared strategies.
- The contextual setting – physical and material conditions, community attributes – of the industrial zone and how they affect the applicability or feasibility of rules.
- The action situation in each of these action arenas, such as the options available to each industrial water user, the benefits and costs attached to each option, the kind of information does each industrial water user obtain about the situation, the cost and benefit functions of other users/actors, and the joint outcomes/group benefits.

Annex 1 presents the entire list of questions that elaborate the IAD framework, which this work used as a guide for the data collection.

Applying the IAD terminology then, the action arenas that matter for wastewater management in industrial zones are site planning, permission granting, information dissemination, monitoring of compliance, and the sanction process. The range of actors is correspondingly large because every action arena has its set of participants, some of whom are active across several arenas, such as the management entity of the industrial zones, who plan the sites, give permission, disseminate information and monitor compliance. The decision-making processes in these action arenas are structured by statutory rules, socially-embedded rules, and shared strategies. Statutory rules which apply are primarily wastewater regulation, but may include regulations on enterprises or management of industrial zones too since these decide who the actors may be. The state's industrial policies could also interfere through other non-water related laws or policies. For instance, small-medium enterprises lack the same easy access to credit that state-owned enterprises have, and foreign-invested enterprises have different operation conditions in the same market. These non-water related rules might affect their actions as actors in the action arena to the extent that they change the incentives for rational profit- and utility-maximising actors. Also, the non-water-related rules alter working rules, such as the boundary rules for entering the action arena of the industrial zone. These rules can be changed at another level, where another set of actors, physical and material conditions, and community attributes matter.

Community attributes might be specific to the industrial zone or Vietnamese business culture, or specific to the residential cluster or the Southern region.

1.4 Research methodology

1.4.1 Research design

The motivation of this research implicitly rejects the nomothetic and partial explanations already offered, and explicitly seeks to examine the context. This work is neither concerned with retroducing underlying causal mechanisms, nor abductively developing a theory. The research goal is description rather than explanation, and the research strategy is inductive. The characteristics of case study research render it particularly suitable:

> "A case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis" (Yin 2014:17)

There are various types of case studies and thus various definitions, but the common denominator is the observation of a spatially bounded phenomenon at a single point in time or over some delimited period of time, and the intensive study of this single unit is for the purpose of understanding a larger class of similar units (Gerring 2004). Because a case study is idiographic in nature, it allows an in-depth description for drawing descriptive inferences, and giving insight into causal mechanisms than causal effects. A case study research design thus has a natural affinity with exploratory, descriptive research (Gerring 2004). It also accommodates an inductive research strategy that seeks to establish generalisations about patterns observed, through the description and examination of a social phenomenon limited in time and space (Blaikie 2009:104ff), because unlike statistical quantitative methods, case studies are more advantageous for the inductive identification of new variables, development of new hypotheses, formulation of contingent generalisations and typological theories (Benett and George 1998:6 cited in Muno 2009:118).

Thus, following a logic of analytic induction[16] (Denzin 1978:192 cited in de Vaus 2001:263f), multiple descriptive case studies will be used in two phases. I start with a single exploratory case study, in order to examine this missing Vietnamese context in environmental management analyses, and either identify variables of interest or formulate a provisional proposition. Because this case serves the aim of exploration, it is not necessary that it is typical or representative. Rather, it would suffice that it should have an interesting aspect (Eckstein 1966 cited in Muno 2009).

[16] Denzin identified the six steps to analytic induction as: (1) specification of the phenomenon that the researcher seeks to explain, (2) formulation of a provisional explanation, (3) conduct of a case study to test the theory, (4) review of the theory, (5) conduct of more case studies, and (6) revision of the proposition until the causal proposition that explains the phenomenon is achieved.

Then, subsequent descriptive case studies will be used to test the preliminary propositions about how wastewater in the industrial zones is managed. Although single case studies are advantageous for research of an exploratory nature, they are lesser so for research of a confirmatory nature; multiple-unit studies allow for the testing of a few hypotheses (Gerring 2004:350). Thus, comparative case studies are a method to reconcile two apparently contradictory goals: that of in-depth insights to capture the complexity of a case, and that of producing some degree of generalisation (Rihoux 2009). Diverse cases[17] that "exemplify diverse values of the variables" are good for exploratory purposes (Seawright and Gerring 2008:298), and this is the selection criterion for these subsequent case studies. In this way, though statistical generalisation is impossible, contingent theoretical generalisation is achieved (de Vaus 2002:238; Yin 2014).

The research question also justified a qualitative over quantitative study. Although some research objectives – understanding the nature of industrialisation in the Mekong Delta and its possible effects on the environment – seemed to be better achieved with quantitative measures, discrepancy between reality and reported figures[18] has been widely observed and reported (Kotsila 2014; Reis 2012 amongst others). Also, qualitative than quantitative data would better meet the research objective of understanding how the Vietnamese context affects wastewater management practices. Additionally, field and data access difficulties were anticipated, and the burden of collecting representative quantitative data was not justified by its limited ability to provide insights into how wastewater is managed.

It can be anticipated that this work's use of case study research, which has for a long time been considered unscientific (Gerring 2004; Muno 2009), and qualitative data would draw questions about its quality, objectivity, reliability, validity and generalisability[19]. The issue of how the quality of qualitative data was ensured will be touched upon in the discussion of research methods. The concern about generalisability has been addressed above. Through the multiple and comparative case studies, the results of this work will achieve a degree of generalisability. They will not be generalisable to the entire population – that is, wastewater management practices in industrial zones in Vietnam generally. But they will produce contingent generalisations about wastewater management practices; specifically, the contextual factors usually left out of the generalising studies on environmental management problems.

There are two aspects to the criteria of validity. Internal validity is about whether the research can sustain the causal conclusions claimed and the extent to which the structure of the design allows unambiguous conclusions to be drawn, whereas external validity is about the extent to which the results can be generalised beyond the study (de Vaus 2002:28f). De Vaus (2002) defends the case study, arguing that the logic of replication in case study research is what confers external validity, and that high internal validity is achieved by the nature of the descriptive case

[17] Diverse cases are one of seven types of cases for drawing causal inferences, as identified by Seawright and Gerring (2008). These are: diverse, typical, extreme, deviant, influential, most similar, and most different. This typology was introduced because explanatory research is more demanding on the research design and the methodology of case selection.

18 See also Chapter 3, in which I present the vast discrepancy in the figures reported by the provincial governments and the actually existing industrial zones.

[19] Baxter and Eyles (2004) have questioned the applicability of these quantitative concepts for qualitative research. They propose credibility, transferability, dependability, and conformability as the appropriate evaluative criteria (for validity, generalisability, reliability, and objectivity respectively)

study, which looks at the whole picture, including the history, and posits correlation than causation. Both multiple cases and description have been built into my research design. But the concern of internal validity extends beyond the research design. It also requires that the research steps were well-founded and sound, and the logical progression from one stage to another is well-grounded (Richards 2005:139). Hence, Richards suggests that triangulation, the use of different sorts of data and methods of handling data, is one way in which validity checks can be built into the research design (2005:140). In the next section, I detail my triangulation efforts, which include: (i) using media reports over the last few years to supplement my own household interviews and account for bias from my side, and also because media representation shapes people's knowledge and perceptions of the issue and constructs particular images of reality (Carvalho and Burgess 2005:1467); (ii) speaking to a wider array of actors than those explicitly involved in wastewater management; and (iii) the analysis of legal documents for the purpose of understanding the working-rule situation through the institutional analysis lens, then determining the degree of deviation from the formal rules, and then for the purpose of understanding the bureaucrats' behaviour observed in interviews.

The criterion of reliability, which relates to the reproducibility of the results and the use of standardised measures which return consistent measurements (Richards 2005:140), has been questioned for being an evaluation criterion designed for quantitative rather than qualitative research (Baxter and Eyles 2004; Bergman and Coxon 2005; Muno 2009). As this research is interpretive in its orientation, the element of subjectivity must be addressed. It has been observed that researchers deal with the subjective element in three ways: as an unavoidable shortcoming, as a fault that can be partially eliminated through careful design, or accepted as a natural part of this type of research (Bergman and Coxon 2005). It is my position that qualitative methods engaged are inherently "unreliable". An open-ended unstructured interview will never produce the same results with a different interviewer. The inductive data analysis process will differ for another researcher who is unlikely to use the very same categories. The criterion of reliability is quite incompatible with this inductive, descriptive, and multiple case study research design. Indeed, qualitative researchers have protested against the transposition of the research evaluation criteria from one theoretical basis to another (Baxter and Eyles 2004; Bergman and Coxon 2005). They have suggested alternative sets of criteria for assessing qualitative research, such as "credibility, transferability, dependability, and confirmability"[20] in lieu of their quantitative counterparts validity, generalisability, reliability, and objectivity (Baxter and Eyles 2004); or consistency and credibility instead of reliability and validity (Bergman and Coxon 2005).

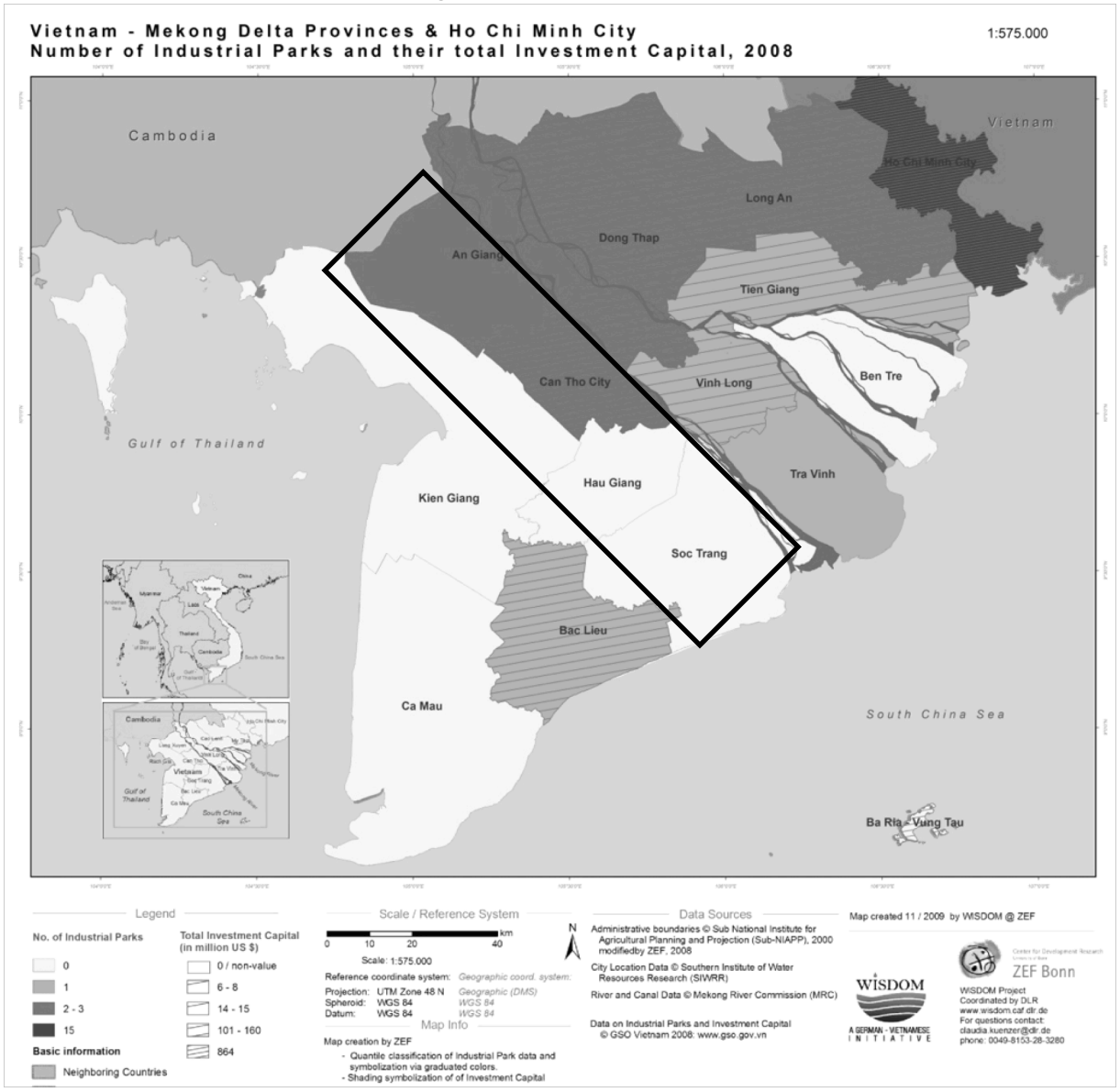
According to these scholars then, to approximate reliability, this research design ought to seek to achieve consistency and dependability. Probing inconsistencies in interviewees' accounts can help to, and was done in order to, ensure the internal consistency of the data. Dependability, the minimisation of idiosyncrasies in interpretation and variability tracked to identifiable sources, is harder to achieve for this research design. Low-

[20] Credibility is the authentic representation of experience. Purposeful sampling, persistent observation, triangulation, and negative case analysis are strategies which can improve credibility. Transferability is about the fit within contexts outside of the study situation. Purposeful sampling and thick description help ensure transferability. Dependability, the minimisation of idiosyncrasies in interpretation and variability tracked to identifiable sources, can be achieved with low-inference descriptors, mechanically recorded data, multiple researchers and peer examination. Confirmability, the extent to which biases, motivations, interests or perspectives of the inquirer influence interpretations, requires that trail products be audited, and thick descriptions of the audit process be provided.

inference descriptors and mechanically recorded data, the use of multiple researchers and peer examination were some of the suggested strategies (Lincoln and Guba 1981 cited in Baxter and Eyles 2004) that rather apply to larger multi-researcher projects than an individual project. I did not have the resources to employ other researchers, my interviewees denied the use of audio recorders, and revisits to confirm findings were not possible because of the research permit application process (see Section 1.4.3). Within the constraints of my research budget and subject matter, I seek to achieve dependability by presenting the data as I subjectively received it. Technically, these fieldwork framework conditions should have precluded my presentation of interview quotations, since they are not verbatim accounts. However, to compensate for the "objective" lack of reliability of this work, I have decided to use interview "quotations" as translated and recorded in my written notes, since these were the basis of my interpretation.

1.4.2 Research area and methods

Figure 7: The research area



Source: WISDOM at ZEF, 2009. An Giang, Can Tho City, Hau Giang, and Soc Trang, the 4 provinces along the Hau River – marked out by the tilted black rectangle – were the field sites in which research was conducted.

Figure 8: The four Hau riparian provinces in the Mekong Delta

	Area (thou. ha.)	Agricultural land (thou. ha.) [as %]	Population density (person/km²)	Industrial output (bil. Dong)	No. of industrial zones
National average		[30,7%]	268	72308,3	3,2
An Giang	353,7	279,1 [78.9%]	609	36.801,5	5*
Can Tho	140,9	113,7 [80.7%]	862	78.163,4	8*
Hau Giang	160,2	133,9 [83,6%]	480	13.183,9	2*
Soc Trang	331,2	208,1 [62,8%]	393	21.823,4	6*

Source: GSO Statistical Database, *interviews with industrial zone management boards

Research area

The research area of the Mekong Delta was predetermined by the fact that this research is conducted under the auspices of the WISDOM (Water-related Information System for the Sustainable Development of the Mekong Delta) Project, a multi-disciplinary research project[21] jointly funded by the German and Vietnamese governments. The project sought to design and implement an information system for the Mekong Delta which would integrate hydrological, hydraulic, ecological and social information. This research was commissioned to study "local industrialisation and water", under the work package "WP 5000: Water, knowledge, and livelihoods"[22]. During the field research, I had to be based in Can Tho City, where the host research institute, Can Tho University, is. The data underpinning this analysis was collected between June 2011 and February 2012. The four provinces where comparative case studies were performed are Can Tho City, An Giang, Hau Giang, and Soc Trang.

Research methods and data collected

During the year of field research, 98 semi-structured interviews were conducted with various organisations and individuals comprising personnel from provincial agencies and sub-provincial agencies, industrial zone management boards, managers of residential areas, households living near industrial zones, journalists, environmental consultants, and foreign consultants working on development projects, at first from all the provinces of the Delta, and then subsequently focused on four of the thirteen provinces. Annex 2 contains a list of all the interviewees, participant observation sessions, and informal talks conducted in the Mekong Delta between June 2011 and February 2012. Investment brochures for the industrial zones, national and provincial regulations on industrial zones and environmental protection, environmental reports about environmental protection in the industrial zones, and newspaper articles were also collected. This was the basis of an archival-type analysis aiming at reconstruction. No wastewater samples were taken. Officially sanctioned visits were made to the industrial zones,

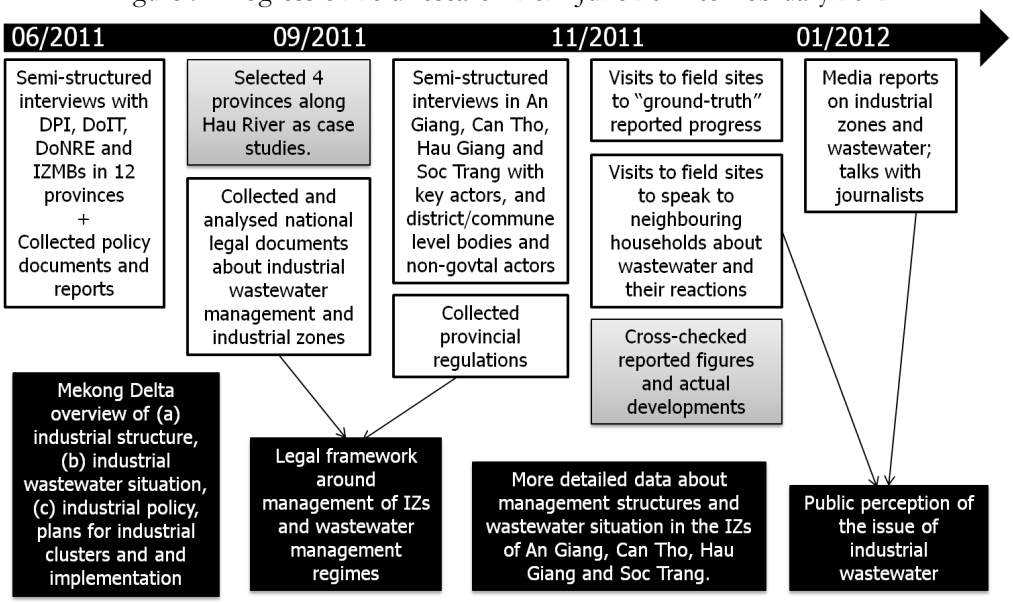
[21] "It is the goal of WISDOM to jointly (Vietnamese and German partners) design and implement an Information System for the Mekong Delta, containing information from the fields of hydrology, sociology, information technology and earth observation. The integration of such data will enable the end-user of the system to perform analyses on very specific questions; and thus will supply the end-user with a tool supporting regional planning activities. (…) The project is structured in goal-oriented work packages to facilitate the multidisciplinary approach and to meet scientific requirements as well as the development of the user-oriented operational services." www.wisdom.eoc.dlr.de

[22] There were 7 work packages: project management; knowledge management; system design; water resources river system and water related hazards; water knowledge and livelihoods; data integration and remotely sensed products; and capacity building.

together with personnel from the industrial zone management boards. I also attended two workshops on wastewater management. A survey of industrial producers was considered but rejected because of the time, expense and unlikelihood of enthusiastic respondents or reception by the hosting institute.

Figure 9 shows the progress throughout the nine months. The research design envisaged going from the macro- to the micro-, by working from the scale of the delta, through the province as context, to the dynamics of the individual industrial zone.

Figure 9: Progress of field research from June 2011 to February 2012



The white boxes show the research steps taken, and the black boxes show the research objectives that were reached.

Initial round of interviews in the Delta

The decision to go to all the thirteen provinces of the Mekong Delta was an attempt to achieve an overview of the situation or state of "industrialisation" in the region, and the significance of the industrial zones for this industrialisation and the local economy. A secondary research objective was to achieve a census of all the industrial zones, because of the contradicting figures available ranging from only a handful to over a hundred. Through previous literature review, four state (provincial) agencies were identified: the Department of Planning and Investment (DPI), the Department of Industry and Trade (DoIT), the Department of Natural Resources and Environment (DoNRE), and the Industrial Zone Management Board (IZMB). Using Ostrom's IAD Framework, a set of questions that sought to identify actors, rules, informal rules, strategies, resources, transaction costs and outcomes were designed for each agency. The interview practices, standardised interview guide, interview scenario, and interviewees are listed in Annex 2.

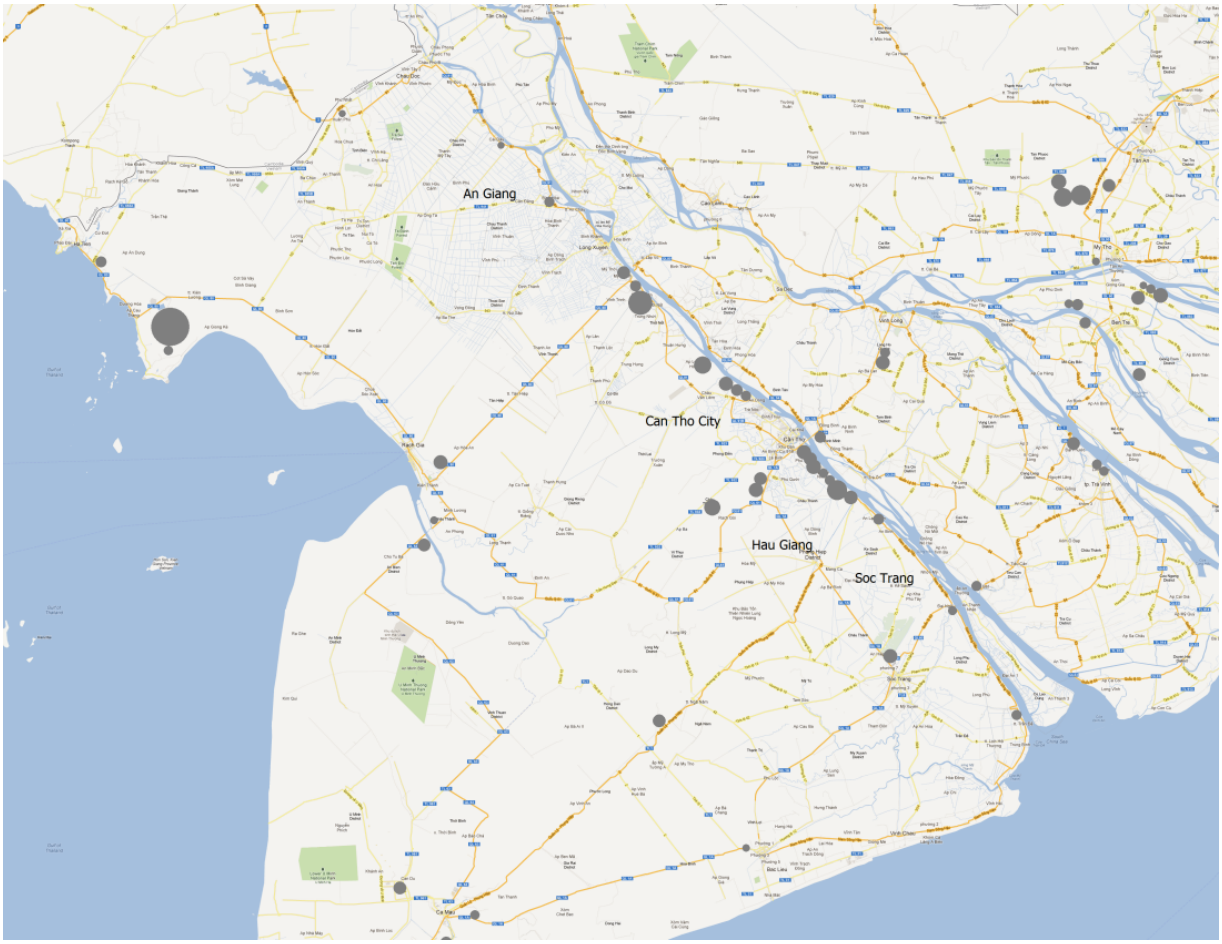
A total of 48 interviews were conducted in twelve[23] out of the thirteen provinces in the Mekong Delta. From the twelve DPIs and IZMBs, provincial investment brochures were collected. The DoITs provided lists of industrial parks (*cum cong nghiep*) and craft villages, and the DoNREs were coaxed to provide information about industrial

[23] The exception was Dong Thap, where my application for research permits was rejected, unless I did not pose any questions about industrial wastewater pollution and restricted myself to two interviews.

wastewater pollution. Instead of insisting on the interview guide in order to achieve good comparability of the interviews across departments and provinces, the interview strategy changed, as the institutional set-up behind industrial zone planning, wastewater monitoring and enforcement took shape, and the interviews were used to probe and clarify unclear elements.

Choice of case studies or field sites

Figure 10: Population of industrial zones in the Mekong Delta



(Adapted from Google maps)The grey points represent industrial zones, and the size of the point indicates the size of the zone. The smallest zones were less than 100 hectares, while the largest were 900 hectares. Most of the zones were between 100-200 hectares large. Most of them were concentrated along the river arms Tien and Hau.

Initially, the plan was to conduct a census of all the industrial zones in the Mekong Delta, because the secondary data I had indicated that there might be less than ten industrial zones. However, my initial interviews in the provinces showed that a census would be infeasible. The interviewees in each province had answered that they had at least five industrial zones, and going to 60 industrial zones scattered around the Delta to conduct in-depth interviews would not be possible within a year. Moreover, the wariness with which my interviewees received me indicated that I would have access problems the second time round. Third, the industrial zones also tended to be concentrated along the confluence of the river arms (the Hau and the Tien rivers) and national roads, as seen in Figure 10 ("Population of industrial zones in the Mekong Delta"). Because the initial round of interviews showed that each province along the Hau River coincidentally had a slightly different contextual matrix, it was decided that these four provinces would form the field sites for the comparative case studies.

Table 7: Comparative case studies

Case	Zone (size, occupancy rate)	Context / Province
1	Binh Long (31ha, 80%) AN GIANG	An Giang lies on the border to Cambodia but at the start of the Hau River. It is probably more sensitised to pollution from across the national border, but as the upstream province, the one with lesser worries about water quality. The province also featured economic zones, which it was keener on promoting than its two industrial zones. The DoNRE interviewees appeared to be more environmentally aware than in other provinces, and were aware of the political economy of environmental protection. The clean development mechanism under the Kyoto Protocol saw the participation of foreign donors who were keen to help aquaculture producers recover waste from effluent for energy generation.
2	Binh Hoa (132ha, 11%) AN GIANG	
3	Tra Noc I (135ha, 99%) Tra Noc II (165ha, 90%) CAN THO	Can Tho experiences low water supply in the dry season. Can Tho is considered to be the heart of the Delta, the most prosperous province. Tra Noc is the only fully functioning industrial zone in the Mekong Delta is in Can Tho, and it is situated in the most densely-populated area. I had good contacts within the infrastructure developer company, and with the German research project that aimed to build a wastewater treatment plant for the zone. Can Tho also has aggressive plans for industrial zones, claiming to have as many as 8.
4	Thot Not (55ha, full) CAN THO	
5	Song Hau (291ha, 61%) HAU GIANG	Hau Giang is the third of four provinces on the Hau River. It is the newest and youngest province in the Mekong Delta, and as such receives financial assistance from the central government for projects that seek to alleviate poverty/constructing the IZ and its infrastructure. Its institutional set-up, including that for environmental protection, is therefore young. It had also implemented a variety of industrial clusters beyond the usual industrial zone and industrial park.
6	Tan Phu Thanh (201ha, 47%) HAU GIANG	
7	An Nghiep (251ha, 87%) SOC TRANG	Salinity intrusion occurs during the dry season in this downstream province. Water supply (mainly groundwater) is also increasingly an issue, and the province has plans to draw and purify water from the Hau river. Thus it seemed likely that it would be the downstream "victim" that would want to exercise pressure on the upstream riparian provinces to reduce their industrial pollution. Several international development organisations are active in Soc Trang with environmental management capacity-building projects. An Nghiep IZ is also the rare IZ with a functioning centralised wastewater treatment plant.

Thus, the seven industrial zones in An Giang, Can Tho, Hau Giang and Soc Trang provinces[24] were chosen because: (i) they lie along the Hau River, and provided an opportunity to observe upstream-downstream dynamics; (ii) they lie in different hydrological regimes; and (iii) each province had slightly different structural characteristics in terms of inter-organisational dynamics and institutional set-ups. There were different private, public and foreign actors involved in water management, and some regulations and rules were applied differentially because of differences in socio-economic status[25]. The institutional and contextual differences are elaborated in Table 7.

Second round of interviews

Having identified additional key actors, such as environmental consultancies, infrastructure developers, business associations, area and commune managers, the next round of semi-structured interviews aimed to explore their understanding of, relation to, or role in environmental management in industrial zones. With state agencies, the questions went into more detail in order to plug the knowledge gaps from the previous round of interviews. With

[24] Annex 5 provides an overview of the industrial zones in the four provinces.

[25] All Delta provinces are considered to be "provinces with especially difficult social and economic situation" (Decision 43/2009/QD-TTg of the Prime Minister dated 19.03.2009) and are allowed to apply more liberal business conditions in order to draw investment. The sole exception is Can Tho City.

others such as households and area managers, a narrative style was employed. The accounts were corroborated with "ground-truthing" visits to the industrial zones to make observations about environmental pollution.

The last group of actors identified were the experts working in the Ministry of Planning and Investment (MPI), which plans industrial zones, and those working in the Ministry of Natural Resources and Environment (MoNRE), which monitors and enforces environmental management regulations. However, the research permits were not obtained as the hosting university was reluctant to endorse my research and visits to the "big" ministries.

Secondary data

Documents collected included:

- National and provincial legislation about environmental protection and industrial zones
- Investment brochures from the provincial DPIs and IZMBs
- Statistical data from DPIs on investment in and outside of the industrial zones
- Lists of industrial parks from the DoITs
- Limited number of reports on environmental protection in industrial zones from the DoNREs and regional environmental protection agency
- Information and reports from the websites of the MoNRE and its Vietnam Environmental Agency (VEA)
- Newspaper articles on industrial zones and environmental protection in industrial zones from the online and English archives of Tuoi Tre, VietNam Net Bridge, Viet Nam News, Saigon Times, Thanh Nien News, as well as the English news from the websites of the Ministry of Natural Resources and Environment and its Vietnam Environmental Agency.

1.4.3 Doing research in the Mekong Delta

Research permits, or "letters of introduction"

In order to get a researcher visa and entry permit, a researcher needs to have a local hosting institute that acts as a sponsor for the visa application. The Department of International Students at Can Tho University was the hosting institute. In this capacity, it was apparently accountable to the local authorities and the Department of Foreign Affairs for the activities and actions of the researchers it hosted. In my case and those of my colleagues from the same project, local "supervisors" were appointed by the hosting institute.

Before any interview can be done, the research permit application process must be begun. Although the Vietnamese do not refer to these documents as research permits, these "letters of introduction" (*thu gioi thieu*) contain information about the researcher, a passage introducing the research project and its objectives, the contact information of the local research supervisor, a schedule of the interviews that the researcher intends to conduct, and the questions that will be posed during the interview. An example of the "letter of introduction" can be seen in Annex 3. This research permit system[26] applies to most interviews, whether they are provincial agencies or sub-

[26] "Letters of introduction" are to be signed by the local supervisor of the research (university staff appointed by the university) before they receive an index number from the communications office of the university. Several copies are then

provincial agencies, as long as the "state" is involved in one form or another. Research permits were not required for private businesses, but I was told that if the state has a stake in the business, as was the case for some factories within the industrial zones, then a research permit would be needed (*Interview: Soc Trang IZMB, 01.11.11; Saigon-Mien Tay Brewery, Can Tho, 22.12.11*).

Despite the precise description of the process, the true red tape in the system comes in the form of arbitrary interventions. The main source of this appears to be the reluctance of the hosting university to antagonise the Department of Foreign Affairs, another agency which will also receive the "letter of introduction", or even the intended interviewee. The first is the requirement that a researcher prepares a schedule of all planned interviews for at least a month. This is, presumably, to avoid that the hosting institute ends up sending the Department of Foreign Affairs multiple "letters of introduction" where one collated letter could have been possible. This requirement greatly reduces a researcher's flexibility to extend interesting interviews or reschedule others. It also poses problems for attempts at cross-checking, since all interviewees know what questions have been or will be posed to the others. On the other hand, this rigid interview scheduling system also forced structure into the approach to the field by requiring periodic revision of collected data and identification of data gaps.

The second form of intervention from the hosting institute is an advisory voluntary censorship, where a researcher is advised, or rather, required to change the indicated interview questions, research method, or intended interviewees. This advice, in my experience, was based on the personal assessment of staff from the hosting institute about the political sensitivity of the questions or interview. The third is an outright no without reasons[27], which renders a systematic analysis of negatives impossible. These constraints in terms of access to interviewees actually encouraged triangulation efforts since one well of data "dried up".

Translation

I had to employ a local research assistant, a fresh graduate in English, to translate for me in interviews. There were not many choices to begin with, and other researchers have also spoken of the difficulties of finding someone young and fluent in English in the Mekong Delta (Reis 2012). A professional translator was not possible with my limited budget; but my research assistant also played more than just the role of translator, handling the administrative procedures of applying for letters of introduction, the logistical matters of transport and accommodation, and providing cultural tips. Her young age, and my own age and gender[28], initially proved disadvantageous in the field, because the interviewees tended to be middle-aged men who were challenged to take a young female researcher seriously.

made; a copy is kept for the records of the university, another copy is mailed to the provincial Department of Foreign Affairs, and the other copy is mailed to the intended interviewee. If this interviewee is in another province, then another copy is mailed to the provincial People's Committee. After the "letters of introduction" are sent off, the researcher has to wait for the replies and confirmations from the interviewees.

[27] This happened with the applications to interview Ministries, where the hosting institute endorsed other colleagues who wished to conduct interviews in Hanoi but withheld permission for my interviews.

[28] The Vietnamese first person pronoun changes depending on the counterpart whom one is addressing. While *doi* (I) is the neutral form, a woman can become a *chi* (older sister) when addressing a younger woman or man, or an *em* (younger sister) when addressing an older woman or man.

Picture 1: Easier access to women interviewees

(Soc Trang, Nov 2011)

Other female researchers have observed the difficulties related to their gender when working with Male Kinh bureaucrats (Scott et al. 2006). My Asian appearance seemed to increase the expectation that I would conduct myself accordingly, and my research assistant even advised me to speak gently and softly and not ask too many questions. On the other hand, my researcher's own conformity to these expectations of etiquette had a dampening effect. The gender challenge also became a gender plus because other young women personnel in the state agencies I interviewed became interested in me (Picture 1), and I was able to invite them for coffees and have informal chats about their work.

Interviewing state agencies

Picture 2: A typical interview venue

The typical interview venue comprises tables arranged in an elliptical formation. The interviewees usually sit on one side of the room while the interviewer-researcher and her translator or assistant (right in picture) are invited to sit on the opposite side. (Bac Lieu Department of Natural Resources and Environment, Jun 2011)

Interviewees from state agencies are usually surprise elements. This begins with the difficulty in obtaining an overview of who's who in a department, so that it is not possible to identify the expert prior to applying for research permission. The "expert" is then usually chosen by the state agency. Occasionally, one might get the director of the relevant division, but sometimes, the appointed interviewee might be someone quite far down the

bureaucratic hierarchy – nonetheless with a title like "manager" – with a corresponding lack of information. Usually, a whole group of three to six is assigned to be the interviewees, though some are evidently only there to make up numbers, and presumably, the representability of the department.

The setting of some of these interviews limits the range of research methods usable. Methods like network-mapping are impossible with the layout of the interview venue (see Picture 2: A typical interview venue). If the division director gives the interview, he is accompanied by almost his entire division, so that my research assistant and I are facing a group of three to five persons. As a person in a position of importance, he would give a form of a speech on the work of his department and division. Specific questions are usually deferred to the subordinate accompanying him, but when I follow up on the answers given, the director would usually interrupt and continue. The other variant on this effect of social customs or hierarchies is when the younger staff defers to the higher-ranked and more senior director despite evidently knowing more. This means that it is difficult to grasp how reliable or valid the accounts given are.

Third, no audio recordings were allowed. Requesting permission generally introduced an air of animosity and suspicion such that I stopped bringing an audio recorder after one month of interviews. Interviewees from state agencies viewed the recordings as potentially incriminating, and were very cautious with their answers, possibly to avoid venturing outside of the boundaries of what they had been authorised to answer. They would thus refer to the letter of introduction or research permit with the list of interview questions, and point out that the question posed was not in the list for which permission had been given. I relied on handwritten notes based on the translated answers from my research assistant. Related to this is the presence of undercover policemen. In some provinces, I observed male "interviewees", who were not properly introduced, reappearing at interviews with different departments. They would usually be quiet throughout the interview but take notes. Fellow researchers shared that they had encountered similar persons and that these are undercover policeman sent to ensure that a foreign researcher's work is no threat to public security. Later, some journalists also pointed out that the police are surely aware of my existence, whereabouts, and actions (*Interview: Tuoi Tre News Agency, Can Tho, 27.10.11*).

Fourth, despite the explicit statement of requests for documents and reports in the approved research permit, not all agencies and authorities liked or wanted to give these out. The utility of these reports also tends to be a wild card. Where the interviewees were reluctant and I persuaded them to give at least a few pages of the report, the report tended to reveal more details than the interviewees had let on. Other times, the reports were the basis of the interviewee's answers as it contained the same figures that the interviewees had been providing. Unfortunately, the reports were given after the interviews ended, so that reasons for discrepancy in figures or facts could not be verified.

The formal character of the interviews, conferred through the interview permit application and coordination process, also made it hard to access the "other side" of organisation-generated information because it might have accorded me with the status of an evaluator. For instance, the DPIs answered the otherwise factual question about investment in their provinces by presenting what they had planned for the province to actually achieve. They were mostly reluctant to provide me with actual tables of the investment profile of the province, even though this is

statistical data that can be obtained from the General Statistical Office of Vietnam. The same happened with the IZMBs, and the DoNREs. The interviewees from the IZMBs would often begin by telling me the number of industrial zones they had planned, and presented it as though the industrial zones had been built and were operating. Repeat interviews, which I planned, in order to follow up on ambiguities, were rejected and the reason was either time constraint or the hosting institute's reminder that I had been there.

Thus, the learning curve with the formal interviews was a steep one. It was initially challenging and discouraging as the anticipated field access issues became a reality. But, given the tight interview schedule I was on, identifying patterns in communication problems was easier, and adjusting my approach happened more easily and naturally. For instance, having noticed that inflated and unreliable figures were always presented first, I would probe to get a more accurate figure.

Informal interviews

Informal interviews thus became the more important mode of data collection because of the constraints of the formal interview setting. However, although no research permits were needed, identifying potential informants was made difficult by the language barrier. Approaching them was often very awkward because of the small-talk which also had to be translated. Because these informants met me in their private capacity after working hours, meetings tended to occur in popular cafes. It was not easy to, working through a translator, keep up the flow of a chat while teasing out more details. The limited time they had also made it unfortunately difficult to build a relationship and make gatekeepers out of them. On the other hand, my foreignness also opened doors. Some of my informants had been simply keen to learn English and saw informal interviews as opportunities for them to practise their language skills. With these informants it was easier to build a relationship. There were also the occasional lower-ranked officials from the state agencies who had exhibited slight signs of disagreement when their superiors spoke during the interviews. These persons were then often keen to share a different unofficial and unendorsed version, and served as a good triangulation "medium".

Media sources

The planning and enforcement agencies are not the best sources of information despite – and because of – their proximity to the issues. Planning and target-setting belongs to the Vietnamese bureaucratic system; but implementation often lags and the revision of targets or agenda-setting does not appear to, at least openly, consider this. A good alternative source of environmental information was the media. Although the freedom of press in Vietnam is questionable (Thayer 2009b:19), the media is seen as a partner in name-and-shame campaigns when dealing with polluters, and journalists from the state media agencies are invited to cover and report inspections (*Interview: Can Tho DoNRE, 13.09.11*). Additionally, the more established Vietnamese news agencies are online and run an English site. An archival search of these bigger Vietnamese news agencies was thus feasible because these online archives often did not go further back than four years. This was convenient because industrial wastewater pollution in the Mekong Delta is a relatively recent issue.

Implications for research data, analysis, and findings

The difficult access to the field can be seen as compromising the quality of my data. The situational characteristics of interviews with state agencies – the formality conferred by the research permit application procedure, the inability to choose my own interviewees, their reluctance to be interviewed, the societal norms around gender roles that might have affected the interviewer-interviewee dynamics, inability to record the interviews – would have undermined my research conclusions (Goldenberg 1992 cited in de Vaus 2001:24). However, the difficulty of the Vietnamese "field" has been reported by other researchers (Scott et al 2006). Insofar, my experience in the field is not unique, and what are otherwise quality-comprising field access conditions do apply to a lot of research conclusions on Vietnam drawn from interviews conducted through the state-endorsed mechanism.

Moreover, the fact that these limitations were already obvious during the field research allowed for adjustment and new coping strategies. Certainly, the fact that this research is the first to broach this subject matter excluded the use of secondary data for triangulation and improving validity. Thus, the non-bureaucrat interviewees and media reports were important in triangulation attempts because they offered perspectives outside of the bureaucracy. The visits to the industrial zones, or their planned sites, also served to confirm that the numbers reported were the planned numbers rather than implemented or actual numbers. Actual physical visits were less helpful for confirming the presence of wastewater pollution, since I am untrained as an environmental engineer and that limited my ability to visually verify the validity of the claims made by household respondents about pollution (see Chapter 4). The interviews with the affected residents also served the function of casting doubt on the spotless image the provincial government and its departments had projected, and also provided contextual wealth by explaining why resident solidarity or objection were not useful elements of wastewater management in Vietnam. While media accounts are more revealing than the answers from enforcement agencies, they are also based in part on the accounts of the enforcement agencies as far as numbers are concerned. Otherwise, they were invaluable alternatives to the accounts I had solicited from the households visited.

1.5 Structure of this dissertation

As previously mentioned, this research aims to examine the context that previous research has overlooked in its nomothesising processes of offering explanations and recommendations. The research objective is description and exploration, and not so much explanation. The research strategy is thus inductive (and potentially abductive). The presentation of this dissertation thus follows this logic: the empirical data and findings are always reported first, before I go on to consider theoretical concepts and implications.

Following this introduction, this work commences with an introduction of Tra Noc industrial zone of Can Tho City, my descriptive and exploratory case study, in Chapter 2. Despite being the oldest and most successful industrial zone of the Mekong Delta, it still does not have a wastewater treatment plant after operating for two decades. It thus also serves as a critical case study: if wastewater management does not work here, given the time it has had to reach the agenda, and the financial viability, why would it elsewhere? Tra Noc Industrial Zone provides

insights into wastewater management: the regulatory framework already involves a variety of state agencies, but the practicalities of wastewater management involve even more actors, rendering wastewater management more complicated. Although the regulatory framework has clear specifications for the wastewater management system, the market reality of high interest rates has hampered the access to credit for constructing wastewater treatment plants. Consequently, illegal discharges are de facto. The main challenge facing monitoring and enforcement is that environmental protection in the industrial zone brings the operational territories of the management board and the environmental department into an overlap that has not been resolved. The management board suffers from a conflict of interest, and the environmental department from ill-defined operational boundaries. Alternative modes – community-based regulation through complaints and the environmental police – are nascent and ineffective.

Based on this case study, three interlinked aspects present themselves as an alternative, "spatial" explanation. The law is both a "magic charm and scapegoat" (von Benda-Beckmann 1989): it is invoked reflexively by the bureaucrats in explaining what they do and what they do not. The existence and navigation of administrative, organisational and operational territories partially explains this behaviour, and the place paradigm of the industrial zone and its perception as a symbol of progress and modernity also helps to explain the reluctance to crack down on pollution from Tra Noc. The problem of environmental management in a specific location thus clearly benefits from a multi-dimensional spatialised analysis. A thorough consideration of the contextual spatial information, such as administrative hierarchies (scale), organisational territories and operational boundaries (collectively territory), and its place meanings (place), brings us away from the usual panacea of capacity and institutional fixes.

Chapter 3 thus examines the creation of place paradigms by looking into the historical development of industrial zones in Vietnam, to trace how the industrial zone went from a mere policy tool to being a place vested with various meanings. The industrial zone was introduced by foreign investors and was quickly adopted as a policy tool, as evidenced by the multiplication of different types of industrial clusters of various scales and investment focus. A unique institutional set-up for a fast-tracked planning, management and establishment was also established. Its eager replication throughout Vietnam, regardless of actual demand from the foreign investors it was designed to attract, attests to its being a one-size-fits-all solution and symbol of progress and economic promise. Drawing on the data collected from twelve provinces in the Mekong Delta, industrial zones are conceptualised as multi-faceted objects with layers of meanings. The vast discrepancy between reported figures and actual conditions on the ground show how the provincial governments perceive the industrial zone as a tool for industrialisation, and a symbol of progress. The same vision is shared by the farmer-residents who see the promise of a more stable livelihood. The institutional set-up around the industrial zone defines it as an "extra-local" place, buffering it from administration at the location it is at.

The effects of the reproduction of the symbolism of the industrial zone at the provincial level for environmental management is examined in Chapter 4, which presents further empirical data from five more industrial zones from three other provinces along the Hau River. The industrial zones were semi-complete with only a handful of active factories, and the lack of private business interest saw the local state stepping in to undertake infrastructure development. Like Tra Noc, and with one exception, the industrial zones were all missing wastewater treatment plants, and the data confirmed that the monitoring and enforcement processes were encumbered by the same

socio-spatial factors. In An Giang, the industrial zone is not the symbol of industrialisation and modernisation it is elsewhere. With its eyes on the bigger and larger economic zone, the province and its administrative machinery do not accord the industrial zone the symbolic awe given elsewhere. This prejudices environmental protection. Hau Giang is a relatively new province, having been established only in 2003, and its industrial zones are laden with promise and regarded as status symbols. At the same time, the set of administrative structures typical of a province are new, and some features are missing. This, too, does not favour wastewater management. Soc Trang is a singular and positive example. Because the other state agencies have a strong and restrictive sense of their organisational operational boundaries, the relinquished environmental management obligations fall onto the industrial zone infrastructure developer company. Without a plurality of actors, Soc Trang has managed to construct a WWTP. Thus, these three field sites form the basis of my inductive proposition that employing an institutional analysis approach with an explicit focus on multiple spatial parameters like scale, place, and territory, benefits an analysis of an environmental management problem.

The last of the themes to be explored is that of how the law is both resource and constraint for the bureaucrats, as evidenced by the ritualistic references to the law. Chapter 5 initiates the investigation by examining the notions of law and legality in Vietnam, as well as specifics of the Vietnamese legislative model, and comes to the thesis of a condition of "unimplementability". Because laws cannot be implemented without supplementary implementation guidelines, and the latter are issued with great delay, omission by the state agencies tends to be the default situation since there is usually something but simultaneously also nothing to implement. This underpins the finding of legal ambiguity as a governing technology. An analysis of the contents of the main regulatory documents on environmental protection in industrial zones shows how the semantics of responsibility, as well as the emphasis of form over substance, creates a situation where legal ambiguity is a resource for bureaucrats. Another function of the law is the creation of spaces and places. Already in Chapter 2, the use of the law to create the industrial zone as an extra-local place was shown. The state administration system is another way through which the law is used to erect the political-spatial structure. But the law is also affected by the spaces and places it makes. A comparison of the regulatory framework inside and outside of the industrial zones shows the zones to be spaces of ambiguity that fragment a regulation landscape.

Thus, by using the IAD framework as a heuristic tool in combination with comparative case studies in answering the research question of how wastewater in the industrial zones of the Vietnamese Mekong Delta is managed, this work also sought to provide a more contextualised explanation that went beyond the usual panacea of cost and benefit, capacity issues and a weak legal framework. The layers and organisation operational territories within the state administrative structure, the extra-locality and symbolism of the industrial zone, and the use of the law to prop these structures and make places, show political spatial structuration, place meanings, and the functions and spatiality of law to be factors that can influence environmental management. Chapter 6 wraps up with a discussion of how a multi-dimensional approach to environmental management analysis aids our understanding of such problems by providing tools for contextualisation.

2. PORTRAIT OF A POLLUTER: TRA NOC, THE OLDEST INDUSTRIAL ZONE IN THE MEKONG DELTA

The idea of industrial zones in the Mekong Delta irritates the popular imagination of the picturesque expanses of green rice fields replete with bobbing conical hats, interrupted only by the meandering river arms of the Mekong. Yet, the Mekong Delta does report a stunning total of over 190 industrial zones ("IZs"). The first of these, Tra Noc Industrial Zone, was set up in Can Tho City back in 1995, briefly after Taiwanese investors proposed the first experimental industrial zone in Ho Chi Minh City. Tra Noc IZ boasts of about 180 investment projects over 300 hectares, and is by far the single most successful state-led effort at industrialisation in the Mekong Delta.

But sixteen years after its establishment, a wastewater treatment plant remains to be built despite mounting pressure from the provincial authorities, resentment from the neighbouring residents, and economic pressure from increasing sanction sums. Untreated wastewater is discharged into the Hau River and the two canals that bisect the industrial zone, and complaints of residents living along the canals over the last ten years have been futile (Bao Moi, 28.07.11). Thus, wastewater management failure in Tra Noc Industrial Zone serves as a critical and exploratory case study of the problem of environmental management in these planned containers of industrial activity. A wastewater treatment plant is essentially an investment, a cost that the infrastructure developer has to bear, and the infrastructure developer in Tra Noc is one of the few in the Mekong Delta that is operating profitably. If Tra Noc IZ does not have a wastewater treatment plant, what are the chances that the less successful and empty industrial zones in other provinces would have a wastewater treatment plant? An examination and explanation for Tra Noc IZ has implications for the state of the environment, given that more IZs have been planned for establishment and expansion.

In Sections 2.1 and 2.2, the social effects and technicalities of the missing wastewater management system are presented. Indeed, the usual combination of financing, legal, institutional and capacity issues offer themselves as a ready explanation. The ensuing environmental pollution is, so seen, a dysfunction of the system. Section 2.3 provides an alternative to this solution-oriented perspective, by investigating the structural features of the system, to show how environmental pollution is not so much a dysfunction but expression of the system. It does so by revealing the roles played by socio-spatial concepts such as scale, territory – in both the physical and metaphorical sense – and place, and that of the law in shaping these critical spatial parameters in environmental management in Tra Noc IZ.

2.1 The story of Tra Noc Industrial Zone of Can Tho City

The land had been used for military purposes during the 1960s (Biggs 2010:197), and was since abandoned. The empty and unused land was ideal for the first industrial zone in the Mekong Delta: the Can Tho Industrial Zone and Export Processing Zone, subsequently renamed Tra Noc Industrial Zone. At this time, the first industrial zone in Vietnam had just been established by Taiwanese investors in Ho Chi Minh City. Even before the national

management agency for the planning and development of industrial zones in Vietnam[29] was officially established, the Prime Minister gave the green light to set up the Can Tho Export Processing and Industrial Zone Authority (CEPIZA) in November 1995 to manage "industrial zone*s and* export processing zone*s* in Can Tho Province"[30]. A state-owned enterprise was founded to invest in the construction and business operation of the technical infrastructure in Tra Noc IZ: the Can Tho Export Processing Zone and Industrial Park Construction and Development Company (CIPCO). The entire enterprise was marked by ambition: even before operations commenced, an extension spanning 165 hectares in the neighbouring commune of Phuoi Thoi in O Mon district was already planned for[31] and then quickly approved[32].

Figure 11: Map of Tra Noc I and Tra Noc II industrial zones in Can Tho City

Adapted from CEPIZA 2012. Tra Noc I IZ is 135 hectares large, and lies in Tra Noc Ward of Binh Thuy District. Tra Noc II IZ is 165 hectares, and is located in another administrative unit (Phuoi Thoi Ward in O Mon District). The Sang Trang Canal bisects the industrial zone, which lies along the Hau River.

Investors filed into the 300 hectares large industrial zone. From small two-men operations worth a couple of thousands, to large multi-million dollars factories employing over two thousand labourers, the 112 factories poured in 867 million USD of capital in Tra Noc, and churned out shoes and garments, processed seafood and agricultural products, milled rice, brewed beer, boiled and pounded steel, and produced cattle feed, petrochemical and pharmaceutical products, amongst others (CEPIZA 2010). While other industrial zones languish with low occupancy rates around 30% (GSO 2008), Tra Noc IZ is nearly full[33].

[29] The National Managing Office of Industrial Zones is the first national management agency responsible for the planning and development of IZs in Vietnam. It was established in August 1996 pursuant to Decision 595/TTg dated 27.08.1996.
[30] Decision 749/TTg of the Prime Minister dated 15.11.1995 to establish the Can Tho Export Processing and Industrial Zone Managing Board so as to manage the Can Tho export processing zone and the industrial parks in Can Tho province
[31] According to the preamble in Prime Minister Decision 100/QD-TTg that approved the extension, the President of the People's Committee of Can Tho Province had submitted a Report No. 2364/CV-HC97, dated 09.12.1996.
[32] Decision 100/QD-TTg of the Prime Minister dated 17.02.1998 ratifying the investment project for construction and business operation of technical infrastructure in Can Tho industrial park and export processing zone Phase II
[33] Tra Noc I is fully occupied while Tra Noc II is 81,65% occupied.

Half of the labourers found work in the aquatic product processing plants[34], peeling and packing seafood like the famous Pangasius fish of Vietnamese aquaculture. The production line called for groundwater, preferred for its superior untainted quality, and pumped from unreported wells (Genschick 2013). The offals, fish fat and blood from the production belt were simply washed out into the river and canals from illegally-constructed discharge pipes. The silent witnesses were the few rare wastewater treatment plants that existed: they had cost a lot to construct, but they were also expensive to operate and were as such not operated (MoNRE News, 16.06.11). In any case, the treated wastewater would have had nowhere to go: there was no drainage system in the industrial zone, because there was no centralised wastewater treatment plant at the end of the drainage system. The infrastructure developer had not constructed them, because it was not a legal requirement ten years ago when it began constructing the infrastructure in the industrial zone. Now, the interest rates were too high to take up the three million euro loan (*Personal communication: CIPCO Personnel, 08.09.11).*

The factories had received the notice from the industrial zones management board that the Department of Natural Resources and Environment (DoNRE) would be coming into the industrial zone for an inspection, and they had duly noted the scheduled dates. On the day of the inspection, the team comprised individuals from all the related state agencies: inspectors from the DoNRE, two representatives of its Environmental Protection Agency and Centre of Monitoring, a laboratory that the Agency runs, representatives of the infrastructure developer, and the industrial zone management board, without whom the DoNRE has no right to enter the industrial zone (*Personal communication: CIPCO Personnel, 08.09.11*). The entourage stuck to the inspection plan right down to the time and spots for sampling wastewater as any procedural irregularity would render their inspection results void (*Personal communication: DoNRE inspector, 19.11.11*). No factories were caught releasing untreated wastewater, since those with treatment plants had turned them on for the inspection, but those without treatment plants couldn't conceal the missing wastewater treatment plants, and for that they were sanctioned (Southwestern Department for Environmental Protection, 2011a).

The residents caught wind of the inspection that had taken place, and were scarcely surprised that none of the factories were caught polluting. They had been complaining for years. But they had all been differently affected. Those that shared a wall with the steel factory could not deal with the noise and the wastewater that seemed to have seeped into their land (*Interview: Household in Tra Noc Ward, 07.10.11*). They were offended by the odours, or the strange black flecks that had settled on their laundry overnight. Along the Sang Trang canal, the water bubbled, darkened, and reeked. Some went into the water for a wash, and left it with rashes (*Interview: Household in Phuoi Thoi Ward, 07.10.11*). The area managers relayed the complaints to their respective district people's committees. The Binh Thuy district authorities called up the industrial zone management board; the O Mon district authorities did not (*Interview: Phuoi Thoi Ward PC, 07.10.11*). It did not occur to anyone to join forces; the Sang Trang canal separated the two districts, and that invisible administrative boundary was the enclosure to their respective worlds. In any case, whether the district people's committee had a hotline to the industrial zone management board or not did not matter. The pollution continued, like it did in other industrial zones across Vietnam, as the news reports went. Some residents had seen these reports and grew aware of the health effects of those odours and the frothy

[34] The 19 aquaculture processing enterprises employed 15,000 of the total of 25,940 labourers, and disbursed 94,559,113 USD in capital, 36% of the total capital disbursed in Tra Noc IZ. (Can Tho Export Processing & Industrial Zone Authority (CEPIZA) 2010)

film on the water. They called the media hotline, hoping that their complaints might gather more momentum (*Interview: Household in Phuoi Thoi Ward, 07.10.11; Interview: Tuoi Tre News Agency, 27.10.11*).

It appeared to have worked, because the National Environmental Agency of the Ministry of Natural Resources put Tra Noc IZ down on its inspection list. This was another type of inspection, because it was unscheduled and the factories would not have time to clean up their act in preparation. The press, with its announcement outlets, and the environmental police, with its sleuthing methods, were invited. This time, covert discharge pipes were uncovered, and the guilty factory was named and shamed in the media (MoNRE News, 16.06.11). But the sanction sum was not paid. The factory owner had claimed bankruptcy and was expected to shut down its operation (*Personal communication: AKIZ project manager, 21.02.12*). It was a tough season for aquatic product processing plants because there was not enough fish. Labourers were being turned away by the plants, and were now on the move throughout the provinces looking for work (VietNam Net Bridge, 26.11.11).

This business cycle fluctuation put another cog into the slowly grinding gears of constructing a wastewater treatment plant. Around 2010, a German research project entered the picture: the AKIZ project[35] tried to introduce a management concept consisting of decentralised pre-treatment facilities at selected factories, and a final centralised wastewater treatment plant. The factories had reported their expected wastewater volume at the peak of their operations. The infrastructure developer had calculated that the centralised wastewater treatment plant needed a processing capacity of 18,000m3/day.night; now, the developer was not certain if the nearly bankrupt aquatic product processing plants would be able to ride out the business bump. A treatment plant with a smaller processing capacity would be cheaper (*Personal communication: CIPCO personnel, 22.09.11*). The infrastructure developer stalled for time again, which frustrated the cooperation with the German research project helping to design the wastewater treatment plant (*Personal communication: AKIZ project manager, 25.10.11*). Their cooperation was fraught with mistrust: the research project could not design a cost-efficient wastewater treatment plant without accurate figures, while the infrastructure developer believed in and held out for a cheaper option. The payment of sanction sums would still be cheaper than constructing a wastewater treatment plant (*Interview: Ex-head of DoST, 28.10.11*). But the sums were increasing: in 2010, the Ministry had told the Provincial People's Committee to levy an administrative fine of 425 million Vietnam Dongs (Southwestern Department for Environmental Protection 2011a). Moreover, the infrastructure developer had been granted two extensions (BaoMoi, 28.07.11); the Ministry of Natural Resources and Environment had ordained that industrial zones without a centralised wastewater treatment plant would be shut down by 2010. The pressure was increasing for CIPCO to finally act.

[35] See Section 4.4.2 for more information on the nature of such research projects.

2.2 The wastewater management system

2.2.1 The main actors, the others, and their relationships

The industrial zone management board (IZMB): The IZMB is a department under the provincial authorities, alongside the various departments for planning and investment, industry and trade, natural resources and environment, *etc.*. The IZMB is primarily responsible for managing the IZs in the province, such as ensuring compliance with national regulations on the management of IZs. But the IZMB has to report figures to the other provincial departments on their thematic issues, like plans, investment attraction, employment generation, and labour issues. Thus, the IZMB is also expected to have an environmental division or persons-in-charge for environmental protection issues in the IZs.

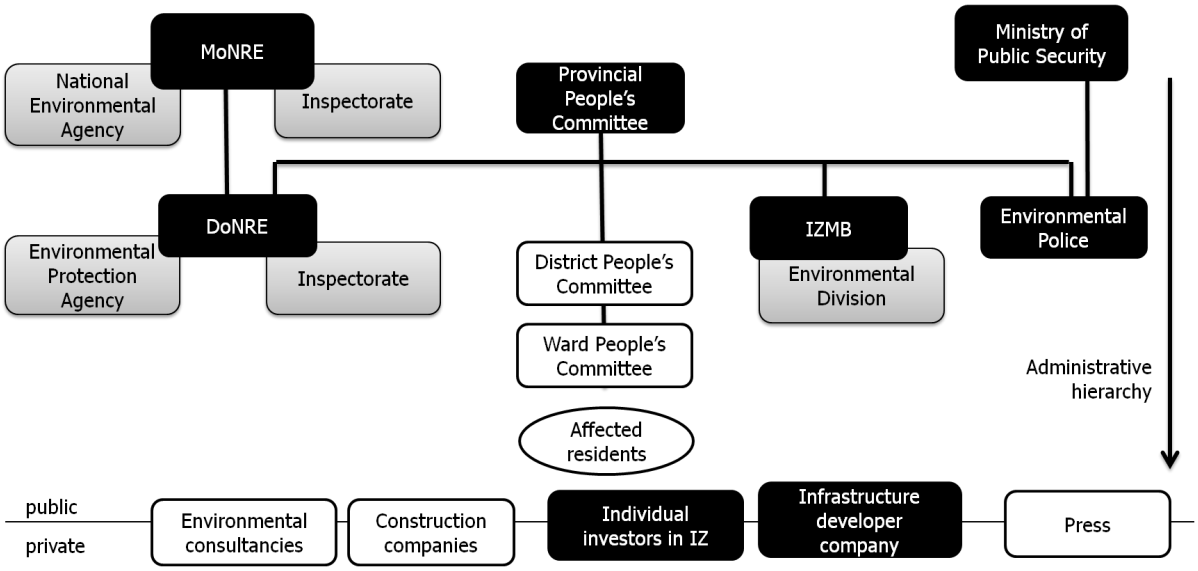
The infrastructure developer companies ("IDCs"): Each IZ is to have an IDC, a private business entity and investor, that undertakes to develop the infrastructure for the right to lease out the plots of land to investors within the IZ for 50 years. This is the contractual relationship between the IDCs and the IZMB of the IZs. These IDCs are also required to have specialised divisions in charge of environmental protection within the IZ that they are developing. The IDC in Tra Noc IZ is Can Tho Industrial Parks Construction Company, also known as CIPCO.

The investors in the IZs: These investors have leased a plot of land for 50 years to build a factory, and pay leasing fees and maintenance fees to the IDC, but report to the IZMB, for instance, on their environmental management and labour force. They are responsible for environmental management in or environmental pollution from their factories.

The Department of Natural Resources and Environment (DoNRE) and the Environmental Protection Agency (EPA): The DoNRE is a department under the provincial authorities, charged with the mandate of managing natural resources and the environment. It also takes instructions from and reports to the Ministry of Natural Resources and Environment. Its Inspectorate is to conduct inspections to ensure compliance to the administrative regulations through the issuance of sanctions. The DoNRE Inspectorate is the only agency in the province that has the right to inspect and sanction. Another division, the Environmental Protection Agency (EPA), is responsible for environmental protection issues in the province, such as the environmental impact assessment (EIA) appraisal and approval processes, and programs for or advocacy for environmental education. These two divisions of the DoNRE work together with the IZMB on the matter of environmental management and protection in the IZs.

These, however, are only the primary actors. As Figure 12 ("Actors involved in environmental management in industrial zones") shows, although the relevant legislation and administrative structures identify merely the DoNRE, IZMB, IDC, and the individual investors, there is a wider range of actors who are involved in different aspects of environmental protection. The machinery of environmental management in IZs can extend to include the environmental police, the inspectorate of the MONRE, environmental consultancies and construction companies, the sub-provincial authority structures, and the press.

Figure 12: Actors involved in environmental management in industrial zones



While the legislation has identified the main actors (marked by the black boxes), field research has shown that (i) the work is done by specific subordinate agencies of these actors (marked out in grey) who are not specifically named in the legislation, and (ii) there is a wider range of actors who could affect environmental protection (marked out in white boxes).

The environmental police: A division of the provincial police, the environmental police have been trained to investigate environmental crimes, and have the right to conduct independent and covert checks on pollution activities. They are the only state agency that does not have to coordinate with any other agency. However, the right to sanction environmental pollution is held solely by the Inspectorate, so the environmental police's work – though important because scheduled inspections are unlikely to catch illegal discharges – only serve as a basis for the DoNRE Inspectorate to conduct another unscheduled inspection.

The Ministry of Natural Resources and Environment: In high-profiled pollution cases, the Ministry of Natural Resources and Environment steps in and visits the province to conduct an inspection (MoNRE News, 16.06.11; Tuoi Tre News, 08.11.11). Since the MoNRE receives reports from all the provincial DoNREs on the environmental performance of factories and IZs, it retains a supposed overview of the state in the country. Every year, the MoNRE National Environmental Agency plans a list of controversial IZs that are to be inspected. The press is invited to join these inspections so as to report on polluters in the news.

The media and press: Besides invitation-only participation in certain inspections, press hotlines also allow residents affected by industrial pollution to call in about such stories of public interest (*Interview: Tuoi Tre news agency, 27.10.11*). But these tips may or may not be considered interesting leads and taken up by individual reporters. The Mekong Delta also has few "independent" news agencies; most of the news agencies are owned by the provincial authorities, which might have effects on their coverage of pollution news that implicate the state, such as when state-owned enterprises are involved. See Section 4.4.2 for a more detailed discussion of their role.

The residents and sub-provincial authorities: Residents usually complain through their representatives. In Figure 12 ("Actors involved in environmental management in industrial zones"), the ward people's committee and the district people's committee are shown as the intervening levels of the sub-provincial hierarchy that separates the affected resident from the provincial authorities. Residents complain to the area manager (in an urban district) or the hamlet manager (in a rural district), who then reports to the ward or commune authorities respectively.

These in turn relay the complaints to the district-level authorities, who then relay the information to the provincial-level authorities. How this sub-provincial hierarchy is navigated seems to vary from place to place. In Tra Noc IZ, the district people's committee helped institute direct contact between the IZMB and the ward authorities and area manager in other to help communicate the residents' concerns faster. This, however, only happened after the provincial authorities had been informed and expressed desire for some resolution. In some other visited provinces, the relay of information stopped at a hierarchical level below that of the province.

Environmental services companies: Practically, environmental protection involves the drawing up of environmental management plans as part of the EIA dossiers and the construction and maintenance of waste treatment facilities. The EIA is the basis for the design of the wastewater treatment plant; the design determines the operation and maintenance. Thus, the availability and competence of environmental consultancies and construction companies is important. The growth of the environmental protection sector and the proliferation of environmental consultancies had led to EIA reports of a very low quality being made. Hence, the government passed a new regulation[36] seeking to improve the quality of EIA reports by increasing operational requirements for environmental consultancies. The problem in the Mekong Delta is one of both quality and quantity. This translates into a question of disincentivising costs for both the IZMB and the individual investors in the IZ. Additionally, these environmental consultancies are not necessarily private entities; the Can Tho City Department of Science and Technology provides consultancy and construction services and has built several of the wastewater treatment plants within Tra Noc IZ (*Interview: Ex-head of DoST, 28.10.11*). The involvement of the state in the environmental protection sector also means that a good relationship with the relevant state agencies helps business because of referrals and tips (*Personal communication: Manager of construction and EIA consultancy, 11.10.11*)

Not only is the range of actors who affect wastewater management practices much wider than that which the administrative structures show, their inter-relationships – such as who answers to whom, and who has the ultimate decision in which situation – are hard to define. Between and amongst the state agencies, in spite of the hierarchical organisation which suggests straightforward and vertical accountability mechanisms, the dominant language in the rule-book of regulations is one of coordination[37], *i.e.*, a horizontal dispersal of power. In Tra Noc IZ, the IZMB's environmental division reports to the DoNRE EPA on the environmental protection activities in the IZs and the environmental performance of the individual investors and the IDC. But this reporting obligation is not part of a relationship of subordination. The IZMB is the gatekeeper of the industrial zone, and the one with whom the DoNRE Environmental Protection Agency and Inspectorate have to work with in order to exercise their exclusive powers of monitoring and enforcement over the investors and the infrastructure developer. Similarly, although the environmental police appear unfettered by the requirement of coordination in investigating pollution, it has to coordinate with the Inspectorate to achieve its goal of penalising the polluter.

[36] Decree 29/2011/ND-CP of the Government dated 18.04.2011 providing for strategic environmental assessments, environmental impact assessments, and environmental protection commitments. The decree introduces preconditions for environmental consultancies. For instance, the professional staff in a consultancy preparing an EIA report must have a university degree and have majored in environmental studies. More than 5 years of work experience is required for a university graduate, 3 years for staff with a master's degree, and at least 1 year for staff with a doctoral degree. Also, the consultancies must possess the technology and facilities to measure, process, and analyse environmental samples.

[37] See Section 5.2.1 "Semantics of responsibility in the regulations"

A blurred public-private divide also characterises the inter-relationships of the many actors. As mentioned, even state agencies involved in environmental control have business interests: DoST and DoNRE both run consultancies. Then, the individual investors and the infrastructure developer/IDC in the IZ, with a few rare exceptions, are not purely private entities. The first implication is the mixing of political objectives and business decisions and efficiency. The IDC in Tra Noc is a private business entity only in name. It was not established as one, and is not run as one: the provincial authorities had set up the IDC with state funds, instead of waiting for a private investor. This was also done for the second IZ established in Can Tho[38]. Although the IDC (CIPCO) was subsequently "converted" to a joint stock company, the state remained active in its management structure with the implication that business decisions are run past the provincial authorities, and consequently subject to and mixed up with political aims. For instance, the question of how much wastewater treatment operation fees to charge the individual investors in the IZ was subject to the approval of the provincial people's committee (PPC), which insisted that the tariffs were revised to meet the lower figure they had once promised the investors, even though this would mean running a treatment plant at a loss (*Personal communications: CIPCO personnel, 08.09.11*). This form of management structure characterises Vietnamese "joint stock companies": the name itself indicates that the company was "equitised", *i.e.*, partially privatised, and a state official usually holds a high management position in these companies. Various state agencies hold business stakes in the polluting "joint stock companies" in the IZ.

The blurred public-private divide prejudices environmental control in the IZ through its creation of a political economy in contradiction with the operational principles of the regulatory framework. The regulations are constructed on the basis of public regulation of private activities. But – to put it plainly – the state cannot sanction the state for violating state regulations. Thus, although inspections uncover pollution and violations of law, the polluters (CIPCO the IDC, as well as the individual investors in the IZ) are not financially sanctioned. Since the sanctions collected are meant to cover the costs of inspections such as sampling and analysing[39], and financing further environmental protection works, the blurred public-private divide has a strong impact on the political economy of environmental protection in IZs. Another implication is an atmosphere of cautious information-sharing (*Personal communication: German engineer, 11.09.11; Personal communications from AKIZ project coordinator and CIPCO personnel*), presumably for fear of enforcement repercussions. Even in more commercial transactions, such as the commission for construction of a wastewater treatment plant, information is neither shared nor checked: the companies do not share the real volumes of wastewater they produce, and the consultancies don't want to incur the costs of double-checking the given figures (*Interview: Ex-head of DoST, 28.10.11, Personal Communication: Director of research institute, 23.11.11).* Another way in which the blurred public-private divide hampers monitoring and enforcement is the state's ownership of polluting industries and the participation of high-ranking local state officials in polluting factories (ADB 2008).

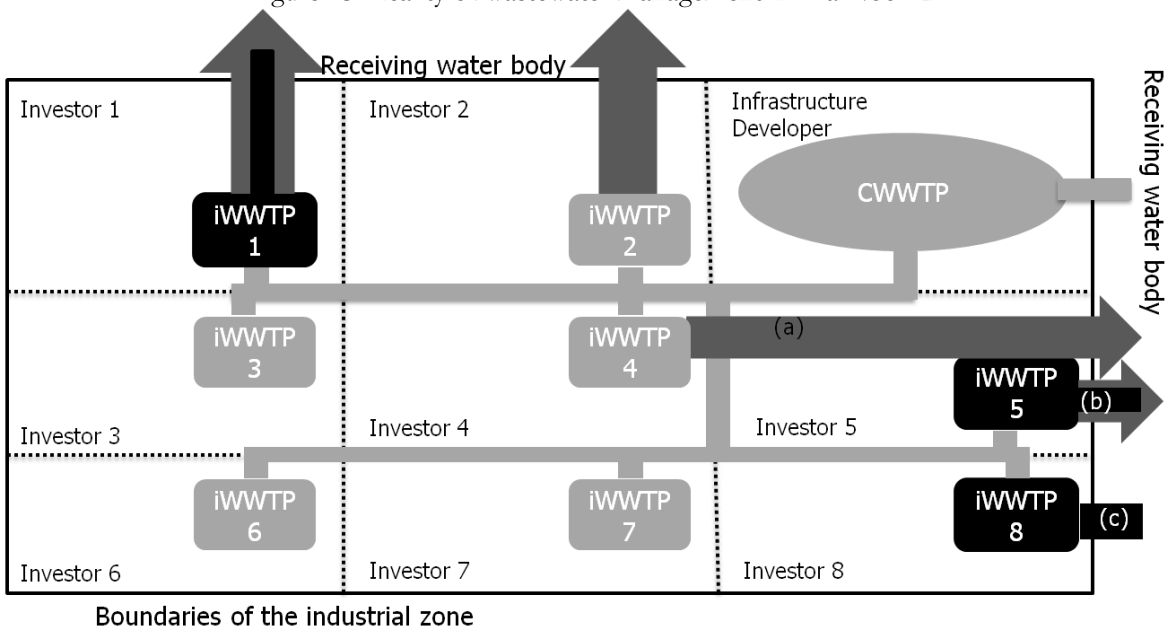
[38] This is not unique to Can Tho City and was also observed in the other Mekong Delta provinces. See Section 4.1.2 "The irony of public non-business units: the state playing investor" for a more detailed discussion of the nature of this public-ly established pseudo-private businesses.

[39] Article 8 of Decree 67/2003/ND-CP of the Government dated 13.06.2003 on environmental protection charges for wastewater, states that the environment protection charges for wastewater are to first cover the agencies' costs in collecting, sampling and analysing the water, and the rest goes to the state budget: half of this goes to the central budget and the other half to the local budgets for use for environmental protection, new investment projects, sewerage dredging, and the repair and maintenance of drainage systems. But it is the Ministry of Finance that guides the management and use of the environmental protection charges for wastewater.

2.2.2 Technicalities of the envisaged and actual management systems

Tra Noc IZ's IDC, CIPCO, has been breaking the law in multiple ways. An inspection conducted in 2010 by the Vietnam Environmental Agency of the Ministry of Natural Resources and Environment found that operations in Tra Noc produced 12,360 m3/day.night of wastewater[40], which was discharged untreated into the three neighbouring water bodies: Sang Trang Canal, Cai Chom Canal and the Hau River (Southwestern Department for Environmental Protection 2011c:19). The following year, the wastewater volume had increased to 13,458 m3/day.night (Southwestern Department for Environmental Protection 2011a). In both years, the inspections found that the infrastructure developer CIPCO had: (i) not constructed a centralised wastewater treatment plant, (ii) exceeded the wastewater quality standards by 10-fold, (iii) not invested in separate drainage systems for rainwater and wastewater drainage, (iv) not applied for a wastewater discharge permit, (v) not paid environmental protection fees for wastewater discharge, and (vi) not constructed permanent solid waste storage facilities or organised waste transportation. In July 2010, CIPCO was sanctioned 425,000,000 Vietnam Dongs (14,600 EUR[41]) for administrative violations against environmental protection regulations.

Figure 13: Reality of wastewater management in Tra Noc IZ



The grey lines and boxes indicate features of the wastewater management system required by law: individual wastewater treatment plants (iWWTP), a sewer system, and a centralised wastewater treatment plant (cWWTP). The black lines and boxes depict the existing situation, while the bold arrows indicate violations of law.

The wastewater management system envisaged by the legal regulations is rationally efficient. The vision is one discharge point for an entire IZ, which would be easier to monitor than several discharge points. All factories would pre-treat their wastewater at their individual wastewater treatment plants ("iWWTPs") to a certain quality, and send it via the wastewater sewers to the centralised wastewater treatment plant ("CWWTP") of the infrastructure developer for one final round of treatment, before it is discharged into one receiving water body. The factories hence have an iWWTP to operate and maintain, as well as a contractual agreement with the IDC on the treatment fees for their pre-treated wastewater, while the IDC operates and maintains the cWWTP. This

[40] Tra Noc 1 IZ discharged 7,132 m^3/day.night and Tra Noc II IZ produced the remaining 5227 m^3/ day.night.
[41] With an exchange rate of 1 EUR=29000VND, as of Dec 2013

wastewater management system is expected to be set up in all Vietnamese industrial zones. Despite the sensible rationale of facilitating treatment costs-sharing amongst polluters and monitoring by authorities, expecting one management system for all IZs of differing wastewater profiles is tantamount to a failure to anticipate the need to accommodate adjustments.

Because it is a precise design, the missing waste management infrastructure in Tra Noc IZ seems to have set in motion further violations. Figure 13 ("Reality of wastewater management in Tra Noc IZ") depicts the treatment system required by law[42] in grey, the actually existing system in black, and indicates the legal violations with bold arrows. The reality in Tra Noc IZ is that the infrastructure developer has constructed neither the sewer pipes nor the CWWTP, so the individual investors have nowhere to discharge their wastewater. Since they have also failed to construct iWWTPs, untreated wastewater is directly discharged into receiving water bodies (see bold arrow labelled "(a)" in Figure 13). A few investors had committed to discharge treated wastewater of Standard A in their EIAs, and so they have had to construct individual WWTPs (see (b) and (c) in Figure 13), although only 2 of the 9 have managed to put an iWWTP into operation (*Interview: CEPIZA, 17.06.11*) (see (b) in Figure 13).

The reasons for non-compliance of various forms in Tra Noc IZ, which will be discussed in greater detail in Section 2.3, are summarily: (i) missing capital for the construction of the CWWTP by the IDC, or the problem of matching technology to budget; (ii) missing capital for the construction of the individual WWTPs by the individual investors; (iii) a problem of access to credit due to high interest rates for commercial loans; (iv) difficulty in finding a cWWTP design that meets (contradictory) requirements such as low construction costs, best technology, and low operation and maintenance costs; (v) difficulty in reaching an agreement amongst the IDC and the individual investors on the appropriate treatment fee tariff[43]; (vi) low sanctions for non-compliance leading to disincentive to seek and pursue compliance; (vii) procedural requirements of the biannual inspections enable polluters to prepare for the check and hence escape detection; (viii) unscheduled inspections that have a higher chance of catching polluters red-handed are hard to organise amongst the involved organisations; and (ix) community regulation via residents' complaints is hindered by the sub-provincial hierarchy and lack of direct communication possibilities with the IZMB.

These findings from the Mekong Delta are unsurprising and basically concur with previous research done on wastewater management in Vietnamese IZs. In the South-eastern key economic regions, an investigation of 32 IZs came to similar findings[44] (Le Quang Thong and Nguyen Anh Ngoc 2004); the authors hence recommended tightening pollution monitoring and assessment, imposing stricter legislative controls and stricter penalties. A more nuanced view of the role of legislation might be well-advised considering my and others' observations that a "one size fits all" regulatory framework does not facilitate compliance by actors with characteristics different from the norm, whether in the context of wastewater management in craft villages (Mahanty et al. 2012), or wastewater

[42] Compare to Figure 29: "Wastewater management in all industrial zones as envisaged by law".

[43] The IZMB and the operating enterprises agree on conversion ratios based on estimated water volume consumed. If the charge rate is 500 VND/kg COD, and there is 1 kg COD/10m3, and water volume consumed is 1000 m3, then 100 kg COD means 50,000 VND. But this is merely water volume supplied, and since most factories additionally have their own wells, the volume of wastewater might be larger (*Interview: Lecturer at Can Tho University College of Environment, 08.06.11*)

[44] The authors identified lack of investment capital, poor legal enforcement, infrequent checks, low penalties for non-compliance, and an inappropriate fee structure for wastewater treatment (which charged users according to the water amount they use, rather than the pollution load in the wastewater they produced).

management generally[45], with the result that the existing wastewater standards and values are "way too strict and can only be technically achieved with immense effort" (Pogade and Scharfe 2012:749). Moreover, regulatory design and implementation alone is only one part of the problem. The issue of coordination between different levels of government and different organisations within a governmental level has been well-documented, not only in the field of environmental protection. Water pollution requires multilevel governance, but poorly defined tasks and responsibilities lead to overlaps and lapses in both vertical and horizontal coordination, and the effectiveness of local state agencies[46] also varies (Mahanty et al 2012). Hence, Le Thi Van Hue and Sajor (2011), also studying wastewater management in a craft village, concluded that it is doubtful if state-centric command-and-control regulatory instruments provide any hope for effective management.

The explanatory account that appeals or is accepted is bound up with the research agenda and objective. A problem orientation seeks solutions. My findings, as well as those of others, allow a summary of wastewater mismanagement in Tra Noc IZ with the old pithy of financial constraints, poor monitoring and enforcement due to low capacity and conflicts and ambiguities about mandates, and weak legal framework. Such an explanatory account merely expresses environmental damage as a dysfunction of the Vietnamese state. This is productive to the extent that it allows for policy recommendations on what to change and improve. But this is not a "thick", contextualised account: its ahistoricality renders it a superficial form of (mis)comprehension. From the early European industrialisation experience, to the East Asian "newly-industrialising countries", the prioritisation of economic growth over environmental protection characterises the growth trajectories of many nations, and Vietnam is not an exception. Yearley (1994) suggests that *all* developing countries have sacrificed their environment for economic growth; the first wave did it out of ignorance, and the second wave did it to play catch up. This broader context to Vietnamese industrialisation, and my research objective of providing a deeply contextualised account, directs me to ask how the Vietnamese state metabolises these two conflicting priorities and whether and how the state structures express this conflict.

2.3 Going further than a verdict of environmental mismanagement as state dysfunction

That there is a legal framework but no legal compliance is not a dysfunction, but rather an expression of the state system and its decisions about which functions to prioritise. My field research suggests that the Vietnamese state has conflicting functions of providing economic growth and environmental protection, but that the former is prioritised, while commitment to the latter is nominal, and this is expressed in its structural, organisational features. As the institutional structure enables and constrains the relevant actors, so their actions and omissions can be understood as being designed for via mandate conflicts, operational ambiguities, or apparent constraints on

[45] The two German consultants, who had been working on a multi-provincial wastewater management technical assistance project in Vietnam, observed that the current regulatory system is designed and oriented around large-scale centralised wastewater treatment systems, and has no provisions for other models (such as decentralised smaller treatment plants).

[46] Although they critiqued the abilities of local stage agencies, the authors argued that commune authorities, considering their strong relationship with the producers-polluters, have been underutilised because "commune is a key level in environmental management because commune officials understand the local conditions and activities…better position to successfully implement workable management solutions on the ground."

alternative modes of monitoring. This section thus discusses the actions and omissions of the various actors involved in environmental protection in Tra Noc IZ with reference to how the structural factors have enabled or constrained them, and how the structural factors express the prioritisation of the economy over the environment despite express commitment to the latter.

2.3.1 Omissions of the infrastructure developer

The root cause of wastewater pollution appears to be the failure of the infrastructure developer to construct a centralised wastewater treatment plant, which might be explained by poor regulation and incentivisation, as well as financing problems. A CWWTP was not a legal requirement in 1995: Tra Noc was established at least seven years[47] before the first circular on environmental protection in industrial zones was passed[48]. Organisational reshuffling[49] meant that the current state of regulation was not decided on until 2008, by which time, Tra Noc was already operating, and the land leasing rates for the entire period of 45 years – with which the infrastructure developer sought to cover its costs for infrastructure construction – were already fixed[50] (CIPCO n.y.). The retrospective legal requirement for a CWWTP thus put the infrastructure developer CIPCO in an economic pinch: it had to take up a loan at high interest rates, even though its CWWTP had technically 10 lesser operational years over which to amortise as an investment, and the infrastructure developer also had to find ways to convince the investors in the IZ to pick up the costs for constructing the CWWTP so as to finance the loan. Because sanction sums are miniscule compared to the costs of constructing a CWWTP – continuing to pay sanctions at a rate of 15,000 EUR a year for the next thirty years would still be four times cheaper than constructing a CWWTP for at least 2,000,000 EUR – the infrastructure developer has no incentive to act fast. The individual investors appear to be motivated by the same cost-benefit rationale (*Interview: Ex-head of DoST, 28.10.11*; *Personal communication: AKIZ coordinator, 25.10.11*). The infrastructure developer's omission was initially inevitable and subsequently intentional.

The chronology of the attempts to decide on and commission a CWWTP suggests that financial considerations have been decisive. The infrastructure developer informed the Vietnam Environmental Agency of the Ministry of

[47] While CIPCO was established in 1995 to manage Tra Noc IZ (Prime Minister of Vietnam 1995), it is hard to ascertain when exactly the plans for the infrastructure were laid down. Empirical fieldwork has shown that the temporal gap between official announcements and actual commencement of work is considerable, and that "commencement" is a stepped process subject to revisions and delays. It is likely that the IZ did not actually physically exist until 2000, although the time usually needed to start building the infrastructure of the IZ might have been reduced since the land had already been cleared for utilization during the war.

[48] Decision 62/2002/QD-BKNMT of the Ministry of Science Technology and Environment dated 09.08.2002 promulgating regulations on environmental protection in industrial zones.

[49] The originally-responsible Ministry of Science, Technology and Environment was reorganised in 2003, and succeeded by the Ministry of Science and Technology, and a new Ministry of Natural Resources and Environment (Decree 54/2003/ND-CP dated 19.05.2003). Although the Ministry of Science Technology and Environment had passed a circular in 2002 with instructions for environmental protection, the succeeding Ministry of Natural Resources and Environment needed to pass another circular to regulate the issue, and this was only done in 2008. Even then, the regulatory framework for environmental protection in IZs is fragmented and unclear. See Chapter 5 for an account of the regulatory framework for environmental protection within industrial zones.

[50] CIPCO had already concluded leasing contracts that fixed the leasing rates, that exclude costs for construction of a CWWTP) for a period of about 45 years. In its template rental agreement, the rental period is stated as "from the signing date to the end of Sep 6th, 2046" for Tra Noc I IZ or "from the signing date to the end of May 5th, 2048" for Tra Noc II IZ (Can Tho Industrial Park Construction and Development Company (CIPCO) n.Y.). With most other IZs established after the legal requirement of a CWWTP, the construction costs are passed on by the infrastructure developer to the individual investors in the land leasing rates; the operation and maintenance costs of the CWWTP are then borne by the users, i.e., the individual investors on a monthly basis (*Interview: Soc Trang IDC*, 01.11.11).

Natural Resources and Environment, after an inspection in 2010, that they were planning for a CWWTP with a treatment capacity of about 20,000m3/day.night, which would cost 24.5 million Euros and be financed by the German Bank for Reconstruction (Southwestern Department for Environmental Protection 2011c), with operating costs around 6000 VND/m3. But this financing possibility fell through. Then another contractor presented another wastewater treatment concept, with an adjusted treatment capacity of 16,000m3/day.night, which would cost around 3.2 million to 5 million Euros (*Personal communication: AKIZ coordinator, 25.10.11*). Unfortunately, macroeconomic conditions saw high interest rates for loans, and the infrastructure developer was thus unwilling to take up loans (*Personal communication: CIPCO Personnel, 08.09.11*), partly because the wastewater treatment fees would be around 10,000 VND/m3 (*Personal communication: AKIZ coordinator, 25.10.11*), almost twice as much as the original tariff that the provincial authorities expect the developer to stick to. Eventually, this too fell through, as CIPCO continued shopping for a yet cheaper CWWTP option (*Personal communication: AKIZ coordinator, 14.12.11*).

The financing issue is not unique to Tra Noc IZ. The Ministry of Natural Resources and Environment suggests that about 60%, of the 223 IZs they surveyed, are missing wastewater treatment management systems. Access to capital is the main issue. Infrastructure developers lack access to commercial loans and must rely on state capital (MoNRE News, 14.04.11). On top of the estimated 20-30 trillion VND required to build a CWWTP, operation expenses might come up to 2 trillion VND annually (MoNRE News, 14.04.11). Although a Prime Minister decision has made it possible for infrastructure developers to seek state investment credit support for the construction of CWWTPs in IZs, IZMBs have complained about the difficulty of accessing state capital sources (MoNRE News, 14.04.11). The Vietnam Environmental Protection Fund provides a preferential interest rate of 5.4 percent per annum, as compared to commercial interest rates of above 15% (*Personal communication: CIPCO personnel, 08.09.11*). But 45% of the total capital in the Vietnam Environmental Protection Fund has already gone into loans for merely 23 industrial zone projects (MoNRE News, 14.04.11), and commercial loans are relatively inaccessible and even undesirable for most infrastructure developers. Given the capital crunch for infrastructure development, most developers prioritised roads and electricity instead of CWWTPs (Le Quang Thong and Nguyen Anh Ngoc 2004).

Yet, although the construction of the CWWTP looks like a business decision, it is not merely one, and the interventions of the provincial authorities show how it is politicised, and how there are conflicting political objectives. Plans for a CWWTP commenced back in 2008 (Tuoi Tre News 28.05.11), but instead of CIPCO at the helm, the provincial authorities tasked the Tra Noc Water Supply Company with its construction. When construction was delayed and it seemed impossible that the CWWTP would be constructed before the May 2010 deadline set in the new Circular 08/2009, the hot potato was passed back to the infrastructure developer. But the authorities made the matter harder, despite their objective of achieving the construction of the CWWP, by insisting on the contradictory objective of pacifying the investors and offering low treatment fees. The IZMB had agreed with the IZ investors on conversion ratios based on estimated water volume consumed[51] (*Interview: CEPIZA, 17.06.11; Personal communication: Lecturer at College of Environment, 08.06.11*), so the infrastructure developer is

[51] For example, if the agreed ratio is 500 VND per kg of COD, and the factory's wastewater profile is such that there is 100g COD per m3 of wastewater, the factory would pay for every 1000m3 of wastewater from its production facilities: 1000m3 = 100 kg COD = 50,000 VND. COD stands for chemical oxygen demand, the oxygen needed to break down the chemical compounds and "renew" the water. It is thus a measurement of the amount of pollution in the water.

expected to provide wastewater treatment at these tariffs to the investors, even though the design plans and calculations show this would be infeasible (*Personal Communication: AKIZ coordinator, 25.10.11*).

> "Everyone is trying to push the question of decision to CIPCO because it is the only private actor." (*Personal communication: AKIZ coordinator, 16.06.11*)

These interventions of the provincial authorities exemplify the blurred public-private divide in Vietnam (Malesky and Taussig 2008; Tenev et al. 2003). CIPCO was a state-owned enterprise that was and is still being privatised. Despite the characterisation of CIPCO as a "private actor" by the AKIZ project manager, it is a *joint stock* company with a continuing "public" element in its control. Its managing director also holds a position in the provincial People's Committee. Despite this public hand that continues to "guide" matters, the infrastructure company is perceived as a private actor by the public hand itself (see quote above). An employee thus remarked that the management is not "tight" because the CEPIZA is too "present" (*Personal communication: CIPCO personnel, 08.09.11*), and the IDC company is required to meet political expectations and yet still be profitable (*Personal communication: CIPCO Personnel, 22.09.11*). The details in implementing a CWWTP reveal the theme of intermingling private and public spheres. This is not new: political economists who looked at privatisation and marketisation in Vietnam have often pointed to the blurred divide between public and private (see for instance Painter 2003b).

But the infrastructure developer's straddling the public-private divide is not only a constraint. Being close to the (provincial) public hand also confers advantages, such as the buffering effect from sub-provincial authorities. Displeasure and complaints from the residents living in close proximity of the IZ had been an issue right from the start (*Interview: Tra Noc ward manager, 10.01.12*), but this did not appear to move the CIPCO. Yet, after the national environmental authorities (the Vietnam Environmental Agency) recommended that the provincial authorities sanction CIPCO for failure to construct a CWWTP, political pressure from the provincial authorities did begin to mount, and CIPCO increased its CWWTP efforts (*Personal communication: CIPCO personnel, 08.09.11*). CIPCO's immunity towards "bottom-up" complaints and susceptibility towards "top-down" pressure from the provincial authorities are the mixed blessings of its public-private hybridism. As a private entity, it does not fall within the hierarchies that define the public sphere and its procedures; its physical distance from the site where the effects of its omissions are felt reinforce the "immunity" of the private towards the public. The infrastructure developer's proximity to the provincial administration and its IZ management board also offers "buffering" from the displeasure at the district level. Yet, this buffer effect falls away when the pressure stems from the provincial level, and the varying susceptibility of its public side to public pressures and concerns shows how even the public sphere is of a stratified hierarchical nature.

Not only does the infrastructure developer's straddling of the public and the private spheres explain its actions and inactions, its establishment is an example of how the local state prioritises economic growth, by using limited state funds to set up an industrial zone instead of waiting for public investors. Moreover, its existence and status as being neither public nor private provides the local state with a strategy for diffusing the pressure it faces to both provide conditions for economic growth, and minimise environmental damage for its legitimacy. The local state in Can Tho City could transfer the pressure, burden to act, and liability for not acting, to the "non-state" actor.

2.3.2 Mandate conflicts of the management board

The theme of hierarchy and stratification in public administration introduced above also finds validation in the actions and inactions of the environmental division of the IZ management board, although low capacity and mandate conflicts might have offered a ready and easy preliminary explanation.

The environmental protection duties of the industrial zone management board[52] are to:

- Ensure that the infrastructure developer companies conduct EIAs for infrastructure construction (including that of the centralised wastewater treatment plant).
- Receive projects in sectors approved in the EIA, prioritising projects with cleaner production and rejecting those that can cause severe environmental pollution.
- Approve EIAs of investors of industrial zones
- Carry out biannual environmental measurements and send the results to the National Environmental Agency and the provincial Department of Natural Resources and Environment.
- Coordinate inspections in industrial zones with the Department of Natural Resources and Environment
- Publicise environmental information from and about the industrial zones, and organise environmental dialogues

Few of its environmental protection duties are actually or entirely fulfilled: they are omitted, outsourced, or partially done. Instead of publicising environmental information on the IZ, the IZMB reported that the individual companies in the IZ were responsible for publicising their environmental information (*Interview: CEPIZA environmental division, 15.09.11*). The environmental division demonstrated no awareness of environmental dialogues; and interviews around the IZ showed that no environmental dialogues had been conducted and no environmental information about the industrial zones have ever been made available to the public (*Interview: Sang Trang area manager, 17.02.12; Tra Noc area manager, 10.01.12*). The biannual environmental measurements are not performed, but rather based on the reports submitted by the factories; environmental measurement at the biannual inspections is outsourced to the DoNRE's own laboratory, the Centre of Environmental Monitoring (*Interview: Centre of Environmental Monitoring, 27.10.11*).

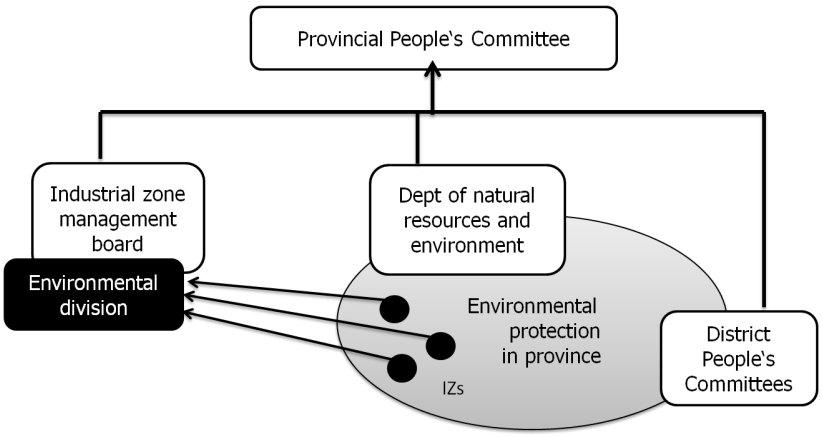
Legal compliance, when it does happen, is more a matter of form than substance. The CEPIZA environmental division comprises solely of three persons, and is a "young" team in terms of experience (*Interview: CEPIZA, 17.06.11*). Yet, the largely inexperienced environmental division has been given the authority by the People's Committee to approve the EIAs of the large-scale factories within the IZ. This might be related to how EIAs are performed, but appears to be more of a formal procedural step. While the infrastructure developer did submit an EIA (Southwestern Department for Environmental Protection 2011c), the IZ has been operating for almost 15 years without an environmental management plan or CWWTP. In Tra Noc IZ, enterprises that apply for ISO

[52] These are the only environmental protection obligations of the industrial zone management board that were explicitly listed in the regulation Circular 08/2009. The Circular refers to functional agencies, competent agencies, and state management agencies as well, and it is plausible that the IZMB has more environmental protection duties than these.

14001 certification[53] need to achieve a certain level of environmental management structure, which is in their EIA reports. Thus, nine factories had committed to discharging treated wastewater of "Standard A", but in reality, only two factories come close to achieving this (*Interview: CEPIZA, 17.06.11*). Commitment on paper is quite different from actual implementation.

With regard to the IZMB's duty to prioritise cleaner investment projects, the IZMB is first and foremost an organisation set up to ensure that IZs are set up. This raison d'être can be supposed to have implications for its attitude towards environmental protection measures that can delay and impede the faster establishment of business operations. The decision logic behind the selection of infrastructure development companies for the IZs is revealing: what counts is "the best technology and the lowest price" (*Interview: CEPIZA, 17.06.11*). Thus, in the matter of the construction of the CWWTP for Tra Noc, price has had a strong influence on decision-making: the CWWTP proposed by the AKIZ project was rejected for being too costly, and the infrastructure developer seemed to prefer a less suitable technology that would be cheaper (*Personal communication: AKIZ Coordinator, 14.12.11*).

Figure 14: The environmental division of the industrial zone management board within the administrative structure



The operational mandate of the environmental division of the industrial zone management board – to ensure environmental protection in industrial zones – is organisationally circumscribed by its status as a sub-unit of the IZ management and ambiguity about its co-existence with the Department for Environment.

A ready explanation is that of capacity problems. Capacity issues offer a simple explanation, but the right question might be why the division is not better-staffed and how that interferes with their work. One way of looking at this is that the environmental division of the IZMB is an extension of the environmental protection agencies in the province. Figure 14 ("The environmental division of the industrial zone management board within the administrative structure") diagrammatically presents the environmental division's existential dilemma. The environmental division only manages 550 hectares or 168 investment projects (Can Tho Export Processing & Industrial Zone Authority (CEPIZA 2011), small enclaves within the much larger administrative area falling under DoNRE and its subsidiary offices at various administrative layers. Indeed, the environmental division can't perform the biannual inspections on its own, and must require the presence of other agencies tasked with environmental protection. This would support such an interpretation of the environmental division as an extension

[53] ISO, the International Organisation for Standardisation, develops and publishes international standards for various subject matters, such as quality management, environmental management, social responsibility, energy management, risk management, and food safety management, amongst others. The ISO 14001 deals with norms for environmental management.

of DoNRE, than a standalone unit intended to replace the DoNRE with regard to environmental protection within the industrial zones.

Yet, the environmental division is technically part of the management board and not the DoNRE, and this affects its mandate of prevention through oversight. The management board's operational mandate is, generally, to "manage and provide public administrative services as well as other supporting services relating to investment and investors' production inside export processing and industrial zones". In the provincial regulatory document that stipulates its functions and organisational structure (Decision 33/2009/QD-UBND of Can Tho City PPC dated 14.05.2009), in a list that runs from (a) to (q), environmental protection is tellingly listed as a sole item (h) The existential mandate to facilitate investment and the establishment process casts a different light on the nature of preventive measures for environmental protection like the EIA: these are procedural steps that prolong and delay investment. In this sense, the mandate of the CEPIZA environmental division clashes with that of the organisation to which they belong. Perhaps, a well-staffed and effective environmental division would even harm than help the management board's raison d'être. Ambiguous wording in the regulatory documents means that overlaps in operational area overlaps are inevitable, and by opening up room for interpretation and further discretionary actions in implementation, the ambiguous wording might even be seen as deliberate rather than accidental. In Circular 08/2009, there are often references to "state management agency", "functional agency", and "competent agency", without any clarification as to who these might refer[54]. In practice, this is often a matter of interpretation on the part of the implementing agencies; when there is a dispute about who should be doing what, an appeal is made to the People's Committee or Ministry to clarify the terms (*Interview: CEPIZA environmental division, 15.09.11*). Thus, an IZMB environmental division that takes an expansive view of its mandate is likely to assume more responsibilities that were delegated ambiguously.

This brief discussion about mandate, operational areas, and operational overlaps, shows the horizontal aspect of the administrative hierarchy. To return to the orthodox understanding of hierarchy: that the IZMB is a provincial-level organisation, and away from the physical locations of the various IZs, facilitates disengagement with these lower administrative layers. For instance, the IZMB is obliged to publicise environmental information about Tra Noc IZ, and organise environmental dialogues. But there were no signs that environmental information had been published whether in bulletins in newspapers, at meetings of the People's Councils, in residential areas, or at the headquarters of Tra Noc IZ and the commune-level People's Committee. The interviewees from DoNRE, Binh Thuy District, and O Mon District of Can Tho City did not appear to know environmental information ought to have been publicised (*Interview: DoNRE EPA, Can Tho, 13.09.11*), or that there was a possibility of an environmental dialogue (*Interview: Tra Noc ward manager, Can Tho, 10.01.12*), which is supposed to be based on requests from people, to serve as a basis for handling violations and compensations. The only form of "communication" that had taken place had been of a more adversarial and protracted hierarchical nature. The residents in Tra Noc Ward and Phuoi Thoi Ward had complained to their respective area managers. "For problems under our authority, we can solve them immediately. If the problem is outside our authority, then we have to go to the upper level." (*Interview: Tra Noc area manager, 10.01.12)* Hence, the area managers then reported to their District People's Committees, which in turn had to report to the City People's Committee. Only when the complaints had reached that level in the

[54] See Section 5.2.1 "Semantics of responsibility in the regulations".

bureaucratic ladder were they dealt with. "If we go there ourselves, the company ignores us. Only if the IZMB comes, then the companies open their doors." (*Interview: Tra Noc area manager, 10.01.12)* This contrasts greatly with the collaborative and consultative process implied by the concepts of publicising environmental information and environmental dialogues. Environmental protection regulations have not pushed past administrative boundaries, or enabled those tasked with environmental obligations to reach out beyond their administrative level. Above all, it shows how the administrative position of the affected residents prejudiced the effective operation of the environmental protection regulations.

Thus, although capacity issues offer a simple answer for why the environmental division of the IZMB has not achieved its mandate of environmental protection through prevention and collaboration, the horizontal and vertical aspects of the administrative hierarchy offers another, more structural, basis for understanding its (in)actions. Horizontally, the environmental division of the IZMB has to negotiate its position with its operational mandate: it is part of the larger provincial environmental protection apparatus, but also part of the IZ management apparatus. That it is not designed to be solely responsible for environmental protection within IZs might explain why it is understaffed and also why it interprets its mandate and obligations narrowly, doing only the formalminimum. Vertically, it sits at the higher provincial administrative layer, and this appears to "immunise" it to lower administrative layers, in the sense that it did not bother to engage with them voluntarily, and only did when the complaints eventually made it to the provincial level.

The inevitable failures of the environmental division in the IZMB exemplify the structural resolution of the state's contradictory priorities of environmental protection and economic growth. The IZMB is designed as a "one-stop" solution to expedite investment procedures and increase a province's attractiveness for investors; but its environmental division's work is to exercise caution, which slows things down. Yet, the environmental division exists. This attests to the legitimising effect that commitment to environmental protection gives the state. In fact, it is a legislative and regulatory requirement that state agencies as well as state enterprises should have an environmental division to ensure the "integration of implementing tasks on environmental protection into programs, plans, and activities"[55]. This structural innovation to the Vietnamese state administration apparatus is supposed to evince commitment to integrating environmental concerns within various thematically-organised agencies. But the positioning of environmental divisions within the administrative structure also subordinates its mandate to that of the agency within which it is located, and the praxis shows that its mission is thereby circumscribed, and the balancing of the environment and the economy remains theoretical.

2.3.3 Operational ambiguity of the environmental department

The previous two examples showed how it is possible to look further than regulatory, financing, and capacity issues by considering the underlying administrative hierarchy as enabling and constraining. This example of the ambiguity around the operational rules of the DoNRE follows this line of argument. A closer look at the responsibility of the DoNRE for environmental protection reveals that there are several sub-units with different terms of engagement, and ambiguous references in the regulatory documents. This requires all of them to coordinate their

[55] Article 2.1 of Decree 81/2007/ND-CP of the Government dated 23.05.2007 defining the professional organisation of environmental protection divisions and sections in state agencies and state enterprises.

monitoring and enforcement activities. Although coordination leads to inefficiency and inefficacy, it is not a dysfunction of the legislative enterprise. The semantics of responsibility and how it reveals legal ambiguity as a governing technology will be analysed in greater detail in Chapter 5.2. This section will first introduce the hierarchical design of state administration, and how its horizontality requires this use of legal ambiguity. Although the DoNRE itself was often referred to, only three sub-units of it are relevant to environmental protection: the Environmental Protection Agency (EPA), its Centre of Measurement (CEM), a laboratory and business), and the Inspectorate. The EPA is the only agency in the entire province that is explicitly charged with environmental protection, but has no right to check or inspect and sanction for violations of environmental protection. That falls within the purview of the Inspectorate, which is the only agency that can inspect and issue reports of detected administrative violations, which includes those of environmental protection as well as natural resources management. Interviewees from both the Inspectorate and the EPA perceive themselves as being limited in their actions by their specific mandates, which requires them to coordinate before undertaking any actions. For instance, before one of the scheduled biannual inspections in Tra Noc IZ can take place, these three agencies have to coordinate additionally with the IZMB, the infrastructure developer, and occasionally, even the MoNRE Inspectorate and members of the press for news coverage of inspection results. For an inspection to occur, a total of five to seven sub-organisations have to be brought together, and all the individual investors in the IZ are then informed of the date of inspection, so that they will be available to open their premises for the inspection. Environmental inspections must meet strict procedural requirements: "everything must be implemented properly or DoNRE can get sued…Most companies will try to sue DoNRE on three grounds: wrong sampling location, wrong decision, and enforcement for unscheduled checks and insufficient samples taken." (*Personal communication: DoNRE Inspector, 19.11.11*)

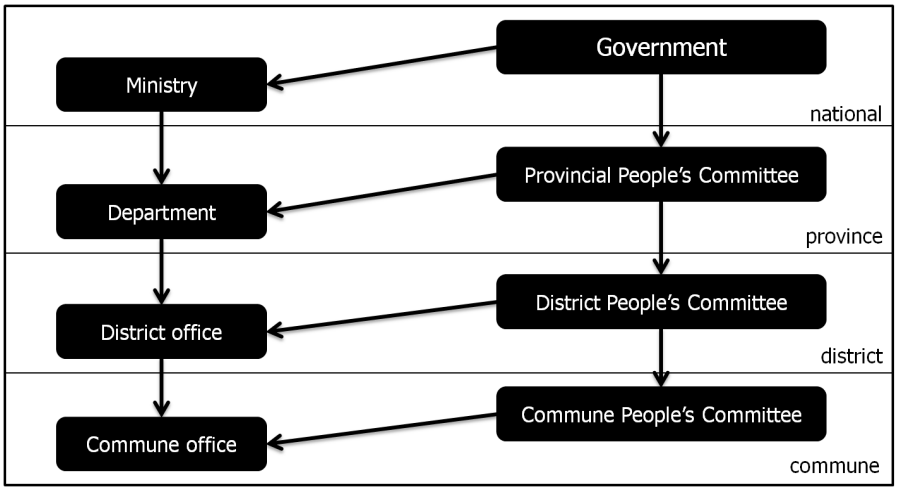
This inter-organizational constellation and coordination is congruent with the alternating ambiguous references in the regulatory documents to "state management agencies", "competent agencies", and "functional agencies"[56]. Who is the "competent agency" in an environmental inspection in an industrial zone? All the above-named "state management agencies" are "competent" and "functional", but can't complete a whole inspection alone because certain powers lie beyond their areas of operation: the EPA cannot sanction, the Inspectorate does not perform measurements, and neither of them can enter an IZ without the IZMB. Interviewees confirmed that when there was a pollution problem and it was not clear which organisation was in charge, they needed to write to the higher authorities to ask for "guidance" and clarification (*Interview: CEPIZA environmental division, 15.09.11*). This appeared to be the case as well for environmental protection outside of industrial zones (*Interview: Can Tho DoIT environmental division, 21.09.11*) and outside of Can Tho City (*Interview: Soc Trang EPA, 28.06.11*).

While this example might suggest that failure to achieve environmental protection might be easily explained by inter-organisational coordination and legal and rule ambiguity, a closer look at the design of state administration provides a different perspective. The Vietnamese government vertically replicates the horizontal administrative structures. Figure 15 ("State administration for environmental protection") shows how the horizontal structure at the national level is replicated at the provincial level and sub-provincial levels as well. The design of state

[56] See Section 5.2.1 "Semantics of responsibility in the regulations" for more details. For a discussion on how the issue of unclear operational boundaries has been dealt with in other provinces, see Section 4.3.1 "Shifting operational boundaries"

administration conveys a certain logic and consolidation in the administrative apparatus, but this appears to be a logic of bureaucracy than actual existential purpose. In Binh Thuy district, the two-men district office was not actively involved in environmental protection activities involving the IZ in their ward of operation; rather, it was the area manager who had taken on the active role of corresponding and communicating between the residents and the state administration structure (*Interview: Household in Tra Noc Ward, 07.10.11*). In O Mon district, in which the other half of Tra Noc IZ and the heavily polluted Sang Trang canal lie, the officer from the environmental district office demonstrated little awareness of the residents' discontent towards the industrial pollution, having merely sent on the letters of complaints that were lodged (*Interview: Household in Phuoi Thoi Ward, 07.10.11*). Alternatively, it has been observed that the number of line agencies decrease with each level of operation, such that there is not always a corresponding unit at a lower administrative level; provincial People's Committees establish, merge and dissolve the administrative units according to the provincial needs, and thus local governmental structures can take different forms (Waibel 2010:15). This calls for a revision of the view of the structural agency of the administrative hierarchy, but it also shows that the state administration structure is the indispensible frame of reference even when it is redundant. Thus, rule ambiguity, seen this way, is a manifestation of the horizontal management structure: if all departments are designed to be on equal footing under the provincial authorities, then none should "go at it" alone when the topic has various aspects that involve various departments.

Figure 15: State administration for environmental protection



The Vietnamese government seeks to vertically replicate the horizontal state administration structures. This is an example of the Ministry for Natural Resources and Environment, but the same administrative structures apply for other Ministries. At every administrative level, a state agency has dual reporting obligations.

This argument that the horizontality of the Vietnamese state administrative system requires legal ambiguity as a governing technology finds support in previous works. For one, the structural roots of legal compliance issues is a long well-known problem: already before the public administration and legal reforms during the early 2000s, it has been opined that poor compliance with legislation is caused by complicated bureaucratic procedures that hinder integration amongst agencies, create confusion, and make tasks complex (Bryant and Akers 1999:180). The "overlap between the jurisdictions of various environmental agencies" is the root cause, because of the *complex vertical arrangement* into different levels of government, *and the horizontal arrangement* of ministries, agencies, and political party organisations (Bryant and Akers 1999:180f). It is important to emphasise both vertical and horizontal aspects of the state hierarchy. But, Painter (2003) takes a different view of the Vietnamese state administrative

structure and argues that the multilayered state management system of departments and agencies is not so much hierarchy than horizontality: it is a system of polycentric power-sharing with semi-independent bodies loosely connected to a weak centre. It is not a system of uninterrupted hierarchies, but rather, overlapping structures: the head of a provincial administrative department in a line ministry is under the command of both the national ministry and the provincial senior officials. The wide dispersal of rule-making authority and discretionary powers, coupled with the Vietnamese system of government by decree which does not transmit clear commands or guidelines has resulted in a condition of "unimplementability". Lower level officials doing real implementation are faced with numerous, sometimes conflicting decrees and circulars, that enjoin instant action and leave room for continued inaction and discretionary interpretation (Painter 2003:19). The characterisation of the Vietnamese administrative system as vertical or horizontal is not critical to the extent that both accounts cast the attention on structural factors rather than capacity or legal factors.

The seeming emphasis on structural explanations is not intended to negate the agency of the actors. Rather, it provides an understanding of the power matrix they move in. A finding of horizontality precedes the understanding of the politics of horizontality. The reason why there is a large number of administrative units is that being a department rather than a sub-department means legal independence, budgetary bargaining power, and fee-charging opportunities (Painter 2003:18). But, this also means contestation of resources, and the Ministry of Natural Resources and Environment (MoNRE) has not been very successful at achieving its equal share of the budget, relative to its counterparts, despite their equal status (Waibel 2010: 36ff). In this sense, the horizontality of the state administrative structure which gives the environment and the economy equal standing expresses the state's need to balance the two objectives, but the politics of this horizontality, budgetary allocation, exposes how environmental protection is not in fact a priority.

2.3.4 Constraints on alternative modes of monitoring and enforcement

Complaints and unscheduled inspections

Having questioned the efficacy of scheduled biannual inspections, I now consider another mode through which environmental pollution tends to be more successfully uncovered: the unscheduled inspection conducted pursuant to residents' complaints.

Residents' affairs are dealt with at the smallest administrative unit: the area (*phuong*) is the subset of a ward in an urban district, and the hamlet is the subset of a commune in a rural district. When pollution occurred in Tra Noc, the residents "reflected to" the area manager, careful to avoid the word "complain" (*Interview: Household in Tra Noc Ward, 07.10.11*). The area manager was also a resident in the area; he, in turn, brought this to the attention of the ward authorities. The first case was in the 1970s, before the IZ was properly established, and involved a company that processed down feathers, causing both air and water pollution. The residents from both the Phuoi Thoi and Tra Noc Wards were so angry that they physically took action, using sand and bricks to build a dam to block off the wastewater flow from the company. It was only at this point that the Ward PC, in fear of an "uprising", reported the "conflict" to the province, and the province and police came to intervene. Even though the IZ compound fences were eventually constructed, more factories commenced operations, and pollution still persists. But there has never been another case of such furore amongst the residents. The residents complain, or rather, "reflect" at

regular meetings, but the reaction time is about two to three months long. Only when the district authorities relayed the reports of complaints to the provincial authorities, were the IZMB informed and the infrastructure developer questioned. The ward authorities eventually appointed an official as a contact point for the area manager, and these two were essentially the only persons in motion: whenever residents complained, the area manager approached his ward-level counterpart, and the two contacted the persons-in-charge from the IZMB and infrastructure developer to "talk to" the polluting enterprise (*Interview: Tra Noc area manager, 10.01.12*). Although this direct channel of communication might be viewed positively as a counter-example to the stratifying effect of the administrative hierarchy, the communication did not usher in any substantive change in the behaviour of the polluter.

Perhaps the inefficacy might be linked to the bottom-up social action lacking conviction in its mission. Interestingly, although residents along the Sang Trang Canal and those in residential Area 134 are equally affected by polluting activities from Tra Noc I and II respectively, the residents, ward managers and district PCs have not attempted to coordinate in any systematic fashion with CEPIZA and CIPCO, engaging rather on an ad hoc complaint-driven basis. Even the affected residents have not ever considered coordinating and combining forces: difference in administration was ostensibly cited as the reason. Sang Trang Canal and most of the later phase of Tra Noc IZ are physically located in O Mon district, while the earlier phase of Tra Noc IZ is located within Binh Thuy district (See Figure 11: Map of Tra Noc I and II industrial zones in Can Tho City). "Phuoi Thoi belongs to O Mon, and Tra Noc belongs to Binh Thuy. Phuoi Thoi goes with its problems to O Mon, and Tra Noc to Binh Thuy" (*Interview: Phuoi Thoi Ward PC, 07.10.11*). It seems, however, that the area managers, who play a key role in the communication between residents and administrative structure, are also aware that "government policy bans people from suing in a group. I am a cadre; I cannot motivate them to do so." (*Interview: Sang Trang canal area manager, 17.02.11*) The situation of an IZ sprawling over two districts and across administrative boundaries thus apparently buffered Tra Noc IZ from the collective complaints of all affected residents. Hence, the administrative hierarchy hampered the mechanism of community-based regulation through complaints both horizontally (district-district boundaries between Binh Thuy and O Mon) and vertically (district-ward-area in Binh Thuy-Tra Noc-Area 134).

Although this risks giving too much agency to the administrative structure, there is further support for this thesis in the fact that the most effective action ever in Tra Noc remains the high-profile inspection involving the Ministry, its inspectorate, the environmental policemen, and the press, which resulted in the financial penalisation of the infrastructure developer and a large aquatic product processing plant. This official sanction from a national-level state agency put the provincial authorities under pressure, which in turn increased the pressure on the infrastructure developer, a private actor directed by the public hand. The polluting private actors in Tra Noc were unmoved by social pressure, and ultimately, top-down sanctions triumphed over bottom-up social action. The inefficacy of bottom-up social action[57], and efficiency of top-level pressure suggest themselves as two sides of the same phenomenon, namely, that of power hierarchisation in the administrative structure.

[57] See Section 4.3.2 "Mismatch of physical location of pollution and management of polluter" for a more detailed discussion of how the complaint mechanism is curtailed by the administrative hierarchy, which is based on empirical material from other Hau River provinces

The environmental police

Fortunately, policing is not only performed by residents: Vietnam set up its environmental police force in 2002. Initially a small national agency, it was soon assimilated and has become a part of the formal governmental administrative structure since 2010. Every provincial police force has an environmental police taskforce, comprising of police officials who were specially trained in environmental sampling, surveillance and sleuthing methods (*Interview: Can Tho EPA, 01.07.11*). Usually acting on residents' complaints and civilian feedback about the activities of production facilities, which have been forwarded to them by DoNRE, their operations are independently planned and covert. Thus, they tend to be more efficient than the EPA in uncovering incidents of environmental pollution. However, the environmental police are crippled by the fact that they have not been mandated to sanction acts of violation of environmental protection obligations; the Inspectorate is the only agency with such ability. There is only a formal notion of environmental crimes, but no legal basis or provision for proceeding. Their powers and limits are discussed in more detail in Section 4.4.1. So, while the environmental police are the only agency that is unfettered[58] by the organisational coordination, the only agent that cuts across the space of the administrative hierarchy in this field report so to speak, the environmental police are only an accessory rather than one of the main actors in the enterprise of environmental protection.

If the monitoring and enforcement rule structure for wastewater management in industrial zones is weak and potentially difficult to reform because of the tenacity of physical, administrative, and organisational boundaries, the current above-mentioned alternatives do not present themselves as true alternatives. Environmental policing is rendered ineffective by organisational boundaries: the police may uncover acts of pollution because of their covet actions, but their independence from organisational coordination also reduces the effectiveness of their work. Civilian complaints are also encumbered by administrative boundaries. The relaying of complaints – from the residents in the area, over the PC in the ward, to the district PC – remains strictly within the administrative hierarchy. These two instances of alternatives to the structure-bound monitoring and enforcement mechanism ironically remain within the constraints of the administrative structure. But they also show how the structure reflects state and local state priorities. Because the IZ is "carved out" from its physical location for management at a higher administrative level, the complaints have to make an additional "step" towards the provincial PC. If the complaint mechanism was faulty enough with the party cadres' fear of implying criticism of management, the IZ's special administrative status compounds the issue, since the IZ is a unique provincial project. This demonstrates how the Vietnamese adoption of foreign investment friendly ideas from abroad – the IZMB is a "one-stop shop" offering investment opportunities without the traditional red-tape for local investors or investors of projects outside these special zones – idealised operational ease of foreign concepts and overlooked incompatibility with its administrative structures. An alternative interpretation is that the IZ's special administrative status illustrates how there are structural modes of prioritising the economy over the environment. To play the devil's advocate, why isn't there a higher-level environmental protection agency, or why doesn't the environmental police have the right to sanction when they have uncovered instances of pollution?

[58] In this regard, the work of the environmental police is worthy of further examination. My applications for formal interviews were rejected; informal attempts were also rebuffed.

2.4 Concluding remarks: the emergence of spatial parameters in this analysis of environmental management

2.4.1 Observations on environmental management in Vietnam

This example of environmental management from Tra Noc IZ has revealed several interesting facets. Whether these are generalisable will be discussed in Chapter 4, which discusses the other case studies from three other provinces in the Mekong Delta. The first pertains to the central role played by the law, in the sense of regulatory documents. Environmental management appears to be based on the literal and not substantive compliance. An employee in the IZMB environmental division lamented that environmental management in industrial zones is about the law and not the environment *(Interview: CEPIZA environmental division, 17.06.11*). Though legislative documents may reference environmental protection principles, these do not appear to guide implementation. The EIA is the prime example of this: they are treated as mere procedural steps to be dealt with, rather than a valuable tool for improving environmental management. This has been observed and confirmed in other sectors and of environmental protection in Vietnam generally (Clausen et al. 2011; Doberstein 2004).

The "law" is both a "magic charm and a scapegoat" (von Benda-Beckmann 1989). These two identities are intertwined and mutually constitutive. The regulatory framework for environmental protection in industrial zones is marked by frequent legislative supplementation. In various presentations of the findings of this research, the author was often surprised to hear contrary voices from the audience when she pointed to the enforcement difficulties arising from the regulatory framework (*Fieldnotes: WISDOM PhD Scientific Seminar, Can Tho University, 22.02.11*. The rebuttals emphasised the subsequent reforms and legal updates, and how the dissatisfactory areas are now "covered" by the new law, decree, decision or circular. This insistence substantiates the earlier point that environmental protection is about the literal law. Yet, despite frequent references to the law, there is a huge discrepancy between what the law dictates and what is practised or implemented. Because the legal framework for resource management and environmental protection has loopholes, overlaps, and grey areas (Nguyen Thi Phuong Loan 2010b), reliance on the law appears to have allowed those involved in monitoring and enforcement to delay action in the name of clarification. The often paradoxical behaviour of the bureaucrats is illuminating: the justifications for poor monitoring and enforcement refer to loopholes in the law (Saigon Times Daily, 08.09.11, VietnamNet Bridge 11.12.11, Viet Nam News, 08.11.11), but the bureaucrats are also careful to avoid criticising the law and praise its irreproachability for having covered the previous grey areas (*Interviews: Can Tho DoNRE, 22.06.11*; *Can Tho EPA, 13.09.11*). Thus, **the bureaucratic reflex of invoking "the law", "the circular", or "the decree" could be perceived more critically as strategic deferment, and demonstrates the duality of the law as magic charm and scapegoat** that von Benda-Beckmann (1989) observes. This argument on the role of legal and rule ambiguity will be further developed in Chapter 5.

The second aspect of environmental management illuminated by the case study of Tra Noc IZ is the existence and navigation of administrative, organisational, and operational territories. The state administration hierarchy of central/national-province/city-district-ward/commune-area/hamlet and the corresponding state management hierarchy of ministry-department-division-office compose a net of administrative, organisational, and operational territories which officials have to navigate. Environmental management issues become matters of jurisdiction.

Instead of calling the IZMB to task for environmental pollution, the area manager who heard complaints had to relay it to the ward authorities, which relayed it further onto the district authorities, which in turn relayed it to the provincial authorities. Inspections involve all state agencies that might have jurisdiction and become coordination tasks than detection possibilities. The IZMB is involved in every environmental management dispute about the IZ because the IZ is solely within its jurisdiction, despite the consequent conflict of interests that casts legitimate doubt on its wanting to hold true polluters accountable. Thus, the administrative hierarchies turn a geographically-confined episode of environmental pollution into an administrative voyage.

The existence of these administrative hierarchies might explain the reluctance of bureaucrats to act in the face of legal ambiguity, but it would be simplistic to name administrative hierarchies as the cause of poor implementation. Rather, it hints at the mutual constitution of law and space (Blomley 1994). The administrative hierarchies are themselves creatures of legislation (specifically the Constitution 1992); but once established, they affected the workings of newer and later legislative acts, such as the circular on environmental protection in IZs, which must fit these pre-existing administrative structures for a viable chance of implementation. The requirement for all state management agencies to coordinate illustrates this. But the creation of the IZMB, and the carving out of the IZ from its physical location and purview of the local authorities, show how the administrative hierarchy is by no means static: new entities with new operational mandates can be added to it, albeit not without affecting it and requiring it to question and redefine operational boundaries. **The oft given explanation of "weak legal framework" can be understood differently, and indeed better, if the administrative, organisational, and operational boundaries and territories – which are created by it and in turn create it – are acknowledged**.

The third aspect that the specific case of Tra Noc IZ has thrown light on is that of a place paradigm. The industrial zone is a relatively new phenomenon in Vietnam, having been introduced in the early 1990s. Nonetheless, it was quickly deployed as an economic development strategy in the provinces, and is a key policy tool in the realisation of the Vietnamese development vision of "industrialisation and modernisation by 2020", as Chapter 3 will show. As such, the industrial zone is vested with symbolism. This can be seen in the institutional set-up for industrial zone development and management: the industrial zone management board is a *sui generis* state management agency, and enjoys the same status as the traditional departments. The Can Tho provincial authorities also perceive the industrial zone as a symbol of modernity and progress, which inflationary figures about the number of industrial zones and the investors they have attracted signify (*Interview: Can Tho DPI, 16.06.11*). Locally, residents also associate the industrial zone with a more secure livelihood alternative (*Interview: Household in Phuoi Thoi Ward, 07.10.11; Phuoi Thoi Ward PC, 07.10.11*), albeit one with a dark, polluting, side. The conflict of interests between the mandate of the IZMB and the work of its environmental division, too, provides a new perspective for understanding poor monitoring and enforcement: within the IZs, the by-product of environmental pollution is secondary to the main goal of industrialisation and economic growth in the form of establishment and occupancy rates. Practically, **the IZ and its managerial board occupy unique and unprecedented positions in the state administrative and management hierarchy. This poses a challenge to environmental protection activities which are organised in conformity to the administrative structures**, which the strange situation of coordinating an entourage for an inspection illustrates well. All these collectively define the IZ as a place with a distinct paradigm of economy over environment.

2.4.2 An alternative, spatial explanation

In this analysis of wastewater management in Tra Noc IZ, the state administrative structure – comprising both its vertical hierarchy and its horizontality – and the creation of the industrial zone as an "extra-local" type of place[59] provided an alternative, structural perspective that challenges the usual conception of environmental damage as state dysfunction.. While weak capacity and legal framework, or poor monitoring and enforcement could provide valid explanatory accounts of why wastewater management in Vietnamese industrial zones failed, these tend to be "universal" answers that can be used for most environmental and developmental problems. Already in Chapter 1, the literature review of works on environmental management in Vietnam hinted at structural issues specific to the Vietnamese system. But, there is a tendency to consider structural factors as incidental, which is often underpinned by the notion that they are correctible, and accompanied by the corresponding policy recommendations to do so. Here, I have demonstrated that the failure of environmental protection despite an existing institutional set-up is not a state dysfunction; it is planned and expected, if we would consider how the structure already expresses both the need to balance the conflicting objectives of economic growth and environmental protection, and the decision to prioritise the former.

The identified structural factors can be reinterpreted as proxies for socio-spatial relations. These are the vertical differentiation of social relations via the administrative hierarchy; the social "un-embedding" of the IZ through bounding it and parcelling it for another state agency not at its location whether physically or administratively; and the contestation of operational areas induced by the horizontality of the administrative system. Considering the structural factors as socio-spatial relations avoids and addresses the analytical issue of structure as static, or the agency of the actors. Socio-spatiality, the relationship between social and spatial structures, is dialectical, in that "the structure of organised space is not a separate structure with its own autonomous laws of construction and transformation", instead, "it represents a dialectically defined component of relations which are simultaneously social and spatial" (Soja 1980). Soja conceptualised the socio-spatial dialectic as a focus for the analysis of capitalist social transformations and social action, as it would specify that the social relations of production and social formations contain within them a fundamental vertical and horizontal structure that affects the position of people (Soja 1980:224). I borrow from his notion of a dialectical relationship between the social and spatial dialectics to underpin my reconceptualisation of environmental management as socio-spatial relations, going thereby past a purely structural and only spatial perspective, to also consider the interplay of different actors and their aims or interests.

By calling upon socio-spatial concepts such as territory, scale, and place, wastewater management failure in Tra Noc IZ can be reconceptualised as the inconsistency between administrative hierarchies and the extra-local character of the industrial zone. The concept of scale allows us to see that the administrative hierarchy organises space to privilege directional communication: management is top-down and reporting and feedback is bottom-up. The concept of territory highlights the operational areas and boundaries of the state management agencies, or rather, their porosity as shown by the issues that straddle operational areas; and how the obligation of coordination is a manifestation of these operational territories' porous boundaries. The concept of place helps us see the

[59] See also Section 3.3 "The extra-locality of industrial zones" and Section 4.2.3 "Exclusion of local authorities and ecology" for discussions on other aspects of this "extra-locality".

meanings attributed to the industrial zone, and how the symbolism and subsequent character of extra-locality poses another challenge to the rigid administrative hierarchy. This case study proves that our understanding of management failures is enhanced by explicitly considering the spatial, and is a first step in the direction of arguing for a "spatialised" approach to environmental management analyses.

While the engagement of several spatial dimensions and concepts in this explanation might appear unorthodox, several geographers have already argued that engaging a single socio-spatial dimension is a failure to engage socio-spatial analysis fully (Jessop et al. 2008; Leitner et al. 2008; Sheppard 2002). If the analysis had insisted on the element of scale, many other explanatory aspects would not have been seen: the meanings vested in the industrial zone by policy makers, implementers and residents alike, which turn the IZ into an economic space that prejudices environmental protection, and the organisational and operating boundaries of the agencies involved in environmental protection. Even if the analysis had proceeded with territory as the focus, scale would have been unavoidable in analysing the administrative structures. To this extent, and particularly for this case, the spatial dimensions of scale, territory and place are not, cannot, and should not be separated or considered in isolation.

The problem of environmental management in a specific location thus benefits from the consideration of all contextual socio-spatial information, such as administrative hierarchies, organisational territories, operational boundaries, and place meanings. The analysis of the legal or regulatory framework is an intrinsic part of this exercise, even in countries where governance and the rule of law is said to be weak, because it serves to identify these imposed or reified socio-spatial elements of structures, territories and boundaries. The political economy and the reality of implementation give flesh to these administrative structures by showing how the various actors or organisations go about the rules. These steps enable contextualisation and the avoidance of relying on "universal" factors such as weak legal framework or weak capacity for explanation.

Several questions follow from the three main observations made in Section 2.4.1. How are places made? Who or what gives the industrial zone meaning, are the meanings consistent, and which meaning dominates and why? How do places interact with administrative hierarchies? Do the administrative hierarchies constrain or facilitate, and when do they fulfil either of these functions? Are they fluid or rigid, and what influences this? What is the function of law in these processes of influence, and how is law affected in return? Thus, Chapter 3 examines the phenomenon of the industrial zone, and the evolution from its inception and deployment as a policy tool, to its assumption of symbolic meaning and extra-local nature. This is the background for Chapter 4, which considers three other case studies from the neighbouring Hau River riparian provinces of An Giang, Hau Giang, and Soc Trang, to see how three different sets of local conditions might affect the administrative hierarchies that are reproduced in every province, and how they do so, with which implications for environmental protection in industrial zones. Then, Chapter 5 returns to the theme of the dynamic between law and space, and reflects on the relationship between the nomothesising law, the administrative hierarchy, and idiographic places.

3. CREATION OF THE INDUSTRIAL ZONE AS AN EXTRA-LOCAL PLACE AND SYMBOL OF MODERNITY

Reports point to the existence of over one hundred industrial zones in the Mekong Delta, but this figure can range from as low as 14 to over 150[60], and the terminological array – encompassing industrial clusters, groups, parks, estates, and zones – is also dazzlingly wide. The images of a rural landscape of rice paddy fields and that of efficient concrete industrial zones may be hard to reconcile as co-existing, and this chapter explores this sprouting of industrial zones in the Mekong Delta. It begins by tracing the chronology of the phenomenon of industrial zones in Vietnam, thereby shedding light on the Vietnamese absorption and adaptation of an exogenous, imported industrial growth policy tool. The history of industrial clusters[61] in Vietnam brings us back to 1991 when the first export processing zone was built by foreign investors. Widely employed in other Asian industrialising economies (Kuroiwa and Heng 2008), the industrial zone ("IZ") was quickly adopted and implemented as a policy tool in Vietnamese industrial policy: its promise of foreign investment-driven economic growth concurred with the national vision of "industrialisation and modernisation by 2020". The concept of industrial clusters has taken off, as evidenced by its terminological multiplication and explicit mention in high-level regional planning documents. Its special policy position saw the creation of a unique institutional set-up that took its management and establishment out of the usual ministerial-provincial arrangement. The previous Chapter showed how the unique policy position of industrial zones affected wastewater management in Tra Noc IZ, because of the meanings attributed to the industrial zone, and how its management is incompatible with the administrative hierarchies. This Chapter shows how it evolved from being a mere policy tool, to a place vested with various meanings. Though physically merely a production location, as a place it became vested with meanings: the provincial governments saw it as a symbol of progress and modernity, while the residents saw the possibilities for improved livelihoods stability. Its introduction and eager replication throughout Vietnam can be seen as proof of its status as a symbol of progress and economic promise.

Specific aspects are addressed: the planning process, management structures, and the actual implementation of industrial zone development planning documents. This draws partially on empirical observations from the field research period in the Mekong Delta between May 2011 and February 2012, where the discrepancy between reported figures and actual implementation directed my research activity. Development targets planned and given by the central government are much lower than the reported density from the provinces themselves, which in turn strongly deviated from actual implementation and development on the ground. The decentralisation tendency in Vietnam and the retention of the top-down socialist planning mechanisms with its reporting structure apparently explain this discrepancy. Then, the concluding discussion conceptualises industrial zones in the Mekong Delta as multi-faceted spatial objects/objects layered with meanings. The zone might have begin as theory on industrial districts with empirical bases from Third Italy, but it has also become an applied theory advocated by consultants for industrial policy. The zone is also a tool for industrialisation in the Vietnamese planning system. It is both a

[60] Section 3.2.1 explains why there are large discrepancies in reported figures

[61] I use the term "industrial clusters" throughout this Chapter and work, as an umbrella term that covers industrial zones, economic zones, export processing zones, high-tech zones, and industrial parks.

plain physical place that seeks to accelerate industrial production and simultaneously an abstract space dominated by the paradigm of economic growth despite its rationale rooted in management. Finally, the zone is also a symbol: to provincial governments it symbolises progress, and to provincial people it is the promise of socio-economic development and stabler livelihoods.

3.1 The spread of the industrial cluster concept in Vietnam

The term 'industrial clusters' was popularised by Michael Porter. Porter investigated the question of why some nations gain competitive advantage in certain industries, by studying the most important and competitive industries in ten trading nations. He surmises in his book, 'The Competitive Advantage of Nations', that there are four broad determinants of a national environment into which companies are born and learn to compete. The "diamond of national advantage" consists of four national characteristics that worked in combination: factors of production, demand from the domestic markets, firm strategy, and related and supporting industries (Porter 1990). This "diamond" provides an environment that enables clusters of competitive industries to emerge. The vertical and horizontal linkages, and the tendency for geographical concentration, mean that one competitive industry fosters the creation of another mutually supporting one. Porter argued that clustering allows firms to fulfil their competitive advantage, and that clusters generate positive externalities. Thus, the role of government is to provide a supportive national environment, by stimulating or upgrading home demand by enforcing strict product, safety and environmental standards; limiting policies that encourage direct cooperation among industry rivals in the belief that competition is unproductive; deregulating competition; and enforcing strong antitrust policies, amongst others. Porter has been, and still is, an advocate[62] for the role of industrial clusters in regional economic growth.

Even though economic geographers before Porter have concerned themselves with the topic in various conceptual frames such as post-Fordism or flexible specialisation, Martin and Sunley (2003) note that Porter's cluster theory has been the most influential in attracting the attention of policy-makers around the world as a tool for promoting national, regional, and local competitiveness, innovation and growth. Hence, they examine the concept, its theorisation, and its empirics, and found the term 'cluster' to be so generic and variously defined, such that it covers a whole range of specialised industrial localisation (Martin and Sunley 2003:8) and the three competitive strategies he suggests are unspecific, immeasurable and hardly universally applicable (Martin and Sunley 2003:16). Industrial clustering is firstly a descriptive term put to empirical findings, but then also used as a theory and model that influences policy-making.

> "The objectives of the development of industrial zones in Vietnam up to 2015 and orientations to 2020 are *to form a system of pivotal industrial zones* which will play a *leading role in national industrial development* and, at the same time, to establish industrial zones of reasonable size for industrial development, *boosting economic restructuring in localities where the industrial*

[62] Currently professor at the Harvard Business School, he also advises the Vietnamese government. Specifically, he and his team "provided the conceptual framework and technical guidance to the drafting team" of the Vietnam Competitiveness Report 2010 (Ketels et al. 2010), a joint product of the Vietnam Central Institute for Economic Management (a think tank under the Ministry of Planning and Investment) and the Asia Competitiveness Institute (at the Lee Kuan Yew School of Public Policy at the National University of Singapore, a Singaporean research institution).

> *share in GDP is low*." (Article 1: Objectives in Decision 1107/QD-TTg of the Prime Minister dated 21.08.2006 approving the development of industrial zones in Vietnam up to 2015 and orientations to 2020.)

The industrial zones in Vietnam are designed tools in Vietnamese industrial policy-making: specific plots of land cleared and equipped with infrastructure, with specific management and taxation regimes to boost attractiveness for foreign investment. But this summary portrayal also belies the initial lack of an element of engineering, and the rapid adoption and utilisation of an exogenous concept.

3.1.1 The introduction of the industrial cluster

Industrial clusters in Vietnam[63] began as an easy imitation of an apparent success model. Export processing zones[64] had first flourished in East Asian economies, such as Taiwan and South Korea (Suehiro 2009), and were then introduced to other Southeast Asian economics noted for fast economic growth, such as Thailand, Malaysia[65], the Philippines and Indonesia (Kuchiki 2007). After Vietnam opened its market in 1986, the first export processing zone in Vietnam was born of a Taiwanese-Vietnamese collaboration, licensed in September 1991, with the Vietnamese government working in collaboration with Taiwanese experts to set down ground rules for this new form of industrial production locus (Waibel and Jordan 2005:346). Other Asian and Southeast Asian countries and companies have also initiated export processing zones in Vietnam, and private companies and official development assistance from other countries have aided infrastructure construction and institutional reform that helped attract foreign investment to industrial zones (Kuchiki 2007:117). Because export processing zones did not deliver the expected spectacular economic growth due to the arduous export-only restrictions, industrial zones which were allowed to manufacture for both the domestic and export markets became increasingly popular. By the middle of the 1990s, the number of and investment capital in industrial zones had overtaken those of export processing zones (Waibel and Jordan 2005:347).

From a mere scattering throughout the country, the industrial zone eventually became part of the standard provincial economic landscape. Annex 3 ("Map of industrial zones in Vietnam, 2008") features a map from the Ministry of Planning and Investment from the year 2008 showing the spatial distribution of industrial zones throughout Vietnam, which shows that almost every province had one industrial zone, if not more. The plans for expansion can be seen in Annex 4 ("Map of planned industrial zones in Vietnam, 2008"). As of July 2007, 16 years after the first industrial zone was set up, the Vietnam General Statistics Office (GSO) reported that there were 550

[63] In the economic geographic literature, industrial clusters are not the same as industrial zones. Three examples of works on Vietnamese industrial clusters illustrate this. When Appold and Nguyen Quy Thanh (2009) considered the prevalence of social embedding in Vietnamese industrial clusters, they looked at clusters of small businesses, and not industrial zones. Quy Nghi Nguyen (2009) directed his attention to the little-researched Vietnamese craft villages. He then characterised the porcelain and ceramic-producing craft villages as "industrial districts", another economic geographic term with specific usage, referring to the emergence/existence of institutions (associations, enterprise clubs) that shape district development. Sakata (2010) considered Vietnamese garments, textiles, rice, seafood, and paper industries and their tendency to cluster, and concluded that the industrial clusters he studied in the Vietnamese context might not be categorised as Porter-type industrial clusters since they do not have complicated networks of value chains.

[64] The World Economic Processing Zones Association defines EPZs as duty-free zones dedicated to manufacturing for export. The World Economic Processing Zones Association is an independent private and non-profit association of economic processing zones and free trade zones, which was founded in 1978 by the United Nations.

[65] Waibel and Jordan (2005) have compared the Malaysian and Vietnamese experience with the export processing zones.

"industrial zones/groups"[66], with 10,817 establishments[67] operating in these geographically delimited areas (GSO 2007). This figure is inconsistent[68] with the maps in Annex 3 and 4, which show significantly lesser zones. Table 8 ("Statistics on Vietnam's industrial zones, 2010") presents another set of figures that were provided by the Department for Economic Zones Management in the Ministry of Planning and Investment to the donor organisations. These variations and discrepancies have definitional causes as well as management and oversight causes, which will be elaborated in Section 3.2.1. The GSO's inflated figure is due to its counting both industrial zones and "groups", whereby it is unclear what industrial "groups" refer to since there is no official definition (see Table 9: Array of industrial clusters officially recognised in Vietnam). This is an expression of the speed and confusion with which the concept of industrial clusters was taken up in Vietnam[69]. Table 9 provides an overview of the types of clusters that have been officially defined. But the provincial authorities, IZ management boards (*ban quan ly khu cong nghiep*), GSO or even the central government have not always used these terms consistently: this is evinced by the variety of terms encountered in provincial investment and trade promotion brochures and websites. Some of these terms, such as "industrial group", "industrial estate", "concentrated industrial cluster", "industrial complexes", "industrial handicraft village parks", or "manufacturing zones" have no official definitions. Some of these are translational ambiguities. Others actually refer to something *sui generis*[70], and it is also possible that it is merely creative marketing aiming at distinction, given that these terms were seen in an investment brochure. Regardless, this terminological array shows how the concept of industrial clusters has caught on in planning and policy circles.

Table 8: Statistics on Vietnam's industrial zones, 2010

Indicator	Foreign invested	Domestic invested	Total
Number of IZs	40	221	261
IZs currently operational	23	150	173
Number of projects	3962	4377	8339
Amount of registered capital	US$53.6 bil	VND336,078 bil	US$74 bil
Amount of disbursed capital	US$17.1 bil	VND 135,950 bil	US$24 bil
Production turnover	US$30.5 bil	VND 57,251 bil	US$34 bil

Source: (Joint Donor Report to the Vietnam Consultative Group Meeting 2011:60). The report authors obtained the data from the Department for Economic Zones Management in the Ministry of Planning and Investment, which is possibly the only organisation that could have an overview of the situation, since all industrial zone management boards report to it. Note that a distinction is made between the number of IZs, and the number of IZs currently operational.

[66] The "zones/groups" phrasing was used by the GSO (Vietnam General Statistics Office) and not created by this author. See Table 5 in Chapter 1. Clustering of industrial zones/groups is strongest in the Red River Delta and the North Central Coast. (GSO 2007) In terms of geographical tendencies, economic zones often occupy the largest areas and industrial handicraft villages are the smallest. Of the 550, 332 were in operation, 112 under construction, and the rest were only approved.

[67] 44.6% were non-state owned enterprises, 28.8% were foreign invested enterprises ('FIEs'), 20.4% were individual establishments, and 6.2% were state-owned enterprises ('SOEs'). (GSO 2007)

[68] Indeed, neither the Annexes nor the GSO provides accurate figures. This section will elaborate on this later.

[69] The divergence of scholarly opinion on whether the existence of industrial zones justifies a statement that Vietnam has taken up the concept of industrial clusters has been covered in Footnote 63

[70] For an example, see Section 4.1.1 ("What's in a name?"), where the example of centralised industrial parks "*khu cong nghiep tap trung*" from Hau Giang is given. The term connotes industrial zones that have been planned by the province without the approval of the Prime Minister. These centralised industrial parks can only be found in Hau Giang.

Table 9: Array of industrial clusters officially recognised in Vietnam

Cluster	Official definition	Source
Industrial zone* *kum cong nghiep*	"a zone which specialises in the manufacture of industrial products and the provision of services for industrial manufacture, which has defined geographical boundaries and which is established in accordance with regulations of the Government"	Investment Law 2005 Article X
Export processing zone *khu khe xuat*	"a zone which specialises in the manufacture of export products and the provision of services for the manufacture of export products and export activities, which has defined geographical boundaries and which is established in accordance with regulations of the Government"	Investment Law 2005 Article 3(21)
Economic zone *khu kinh te*	"a zone which has an economic area separated from the general investment and business environment and with specially favourable conditions for investors which has defined geographical boundaries and which is established in accordance with regulations of the Government"	Investment Law 2005 Article 3(20)
Hi-tech zone* *khu gao ye*	"a zone which specializes in research, development and application of high technologies and which provides a centre for fostering high-tech enterprises, for training human resources in high technologies and for manufacturing and trading high-tech products, which has defined geographical boundaries and which is established in accordance with regulations of the Government"	Investment Law 2005 Article 3(22)
Industrial park *cum cong nghiep*	"a delimited geographical area with residents in which enterprises, industrial and cottage-industrial production establishments and establishments providing services for industrial and cottage-industrial production are concentrated; which is built mainly for the relocation, rearrangement and attraction of local production establishments, small- and medium-sized enterprises, individuals and households to conduct production and business activities; and which is established under decision of the People's Committee of a province or centrally run city." "An industrial park has an area not exceeding 50 hectares. When it is necessary to expand an existing industrial park, the total area of an expanded industrial park must not exceed 75 hectares."	Decision 105/2009/QD-TTg of the Prime Minister dated 19 August 2009, promulgating the Regulation on the Management of Industrial Parks, Article 2

*Both industrial zones and hi-tech zones have also been referred to as industrial parks and hi-tech parks in some official regulations. This work prefers the word "zone" to "park", and reserves "park" for the smaller variant. There are also other terms, such as industrial estates, industrial handicraft villages, or industrial parks, which are not here.

The rapid adoption of the industrial cluster concept has to do with the advocacy of donor organisations and their cooperation with Vietnamese research institutes closely tied to the policy-making apparatus. The Asian Development Bank (ADB), the World Bank (WB), and the United National Industrial Development Organisation (UNIDO) have worked with the Central Institute of Economic Management (CIEM) and the Development Strategy Institute (DSI) of the Ministry of Planning and Investment (see Hoang Sy Dong et al 2009). In fact, the Vietnamese government's apparent confusion about the nature of industrial clusters and its seemingly chaotic implementation of industrial cluster policy can also be seen in the planning or policy advocacy circles. The works or reports invariably begin with a review of the economic theories behind industrial clustering before proceeding to make policy recommendations involving or revolving around industrial zones and its variants[71] (McCarty et al 2005, Coniglio et al 2012, Vo Tri Thanh et al 2012). For instance, a special essay compilation was published by the CIEM, which featured theoretical pieces featuring policy recommendations from the "foreign experts" (Coniglio et al 2010), and then contributions from Vietnamese authors reflecting on the steps forward for Vietnamese policy (Vo Tri Thanh et al 2012). While Coniglio et al observed that the evidence shows that industrial clusters are seldom artificially created from scratch by public policy and spontaneously emerge in the absence of explicit support

[71] For instance, McCarty et al (2005) recommended business associations and IZs, IPs and EPZs as potential cluster facilitator mechanisms.

policies (2012: 67), they argued nonetheless for cluster policy (focussing on small-medium enterprises and not industrial zones) because of the existence of market failures. Vo Tri Thanh et al (2012) thus noted that there is confusion in Vietnam about the role and nature of industrial zones and industrial clusters: "The concept of "industrial cluster" is so far quite unfamiliar in Vietnam, and in many cases, its nature and significance are misunderstood or associated only with industrial parks and clumps (simply means the geographical concentration of a number of enterprises in the zone but not necessarily characterized by linkages and connection among such enterprises and related institutions)" (p94). Yet, they proceed to make policy recommendations focussing on the industrial zones[72].

Table 10: Differences between the types of industrial clusters in Vietnam

	Translated:	Size	Management body	Prevalence/Distribution
Industrial zone	*Khu cong nghiep*	>50ha	Industrial zone management board	Most common. Every province tries to have one.
Export-processing zone	*Khu khe xuat*	>50ha	Industrial zone management board	Predecessor of the industrial zone, at the time when export restrictions existed
Hi-tech zone	*Khu gao ye*	>50ha	Industrial zone management board	Handful, mostly on paper and in the two growth poles (Ho Chi Minh City and Hanoi)
Economic zone	*Khu kinh te*	Large	Economic zone (and industrial zone) management board	Handful, mostly on paper and in provinces with international borders or coasts
Industrial park	*Cum cong nghiep*	<50ha	Department of Industry and Trade; district people's committees	Idea is that every district should have one

This glossary is based on the regulatory documents, and reality does depart from the definitions: some industrial zones are less than 50 hectares large, export-processing zones don't exist anymore, and some industrial parks are larger than 50 hectares.

The industrial zone (*khu cong nghiep*) (IZ) is the most common. These are defined in law as geographically-delineated areas larger than 50 hectares[73], and are designed to offer investors preferential investment conditions. As can be seen in Table 9 ("Array of industrial clusters officially recognised in Vietnam"), there are other variations, but all share the similarity that they are also goaled towards attracting investment, albeit in different sectors. The export processing zone (*khu che xuat*) is essentially an IZ reserved for enterprises that produce entirely for export. These were common at first, but as the restriction towards production for export has been dropped, companies no longer need to be located in one. The high-tech zone (*khu gao ye*) is a less common variant; these industrial zones are designed to attract hi-tech industries and are as such not feasible for every province. So far, they have only been planned in economic centres such as Ho Chi Minh City but delays are common due to investors pulling out[74] (The

[72] They recommended: minimising inefficiencies and effectively tackling the shortcomings and constraints in developing industrial zones and parks; evaluating the impacts of industrial zones and parks and supporting industries on industrial development, competitiveness, and linkages among enterprises and institutions operating inside and outside of these industrial zones; and establishing a cluster policy governance body.

[73] But some of the industrial zones in the Mekong Delta are smaller than 50 hectares.

[74] The municipal government of Ho Chi Minh City revoked the investment certificate for the US1.2 billion Thu Thiem Software Park project after three years of delay. The investor was a joint stock company but after the foreign partner withdrew, the local partner incurred huge losses. After an initial ground-breaking ceremony, no work was done and the investors did not pay land rent as committed.

Saigon Times Weekly, 04.02.12). The newest trend is the economic zone (*khu kinh te*): provinces seek to establish these megaprojects in border regions, which is why they are occasionally also referred to as "border-gate economic zone" (*khu kinh te cua khau)*. These economic zones range from 1000 to 9000 ha, and combine different land uses, usually consisting of a non-tariff trade area, an industrial zone, an urban and entertainment centre, *etc.*.

The industrial park (*cum cong nghiep*), variously translated as industrial complex, or industrial cluster, is a geographically delineated area smaller than 50 hectares or, at the maximum, 70 hectares. Size is not the only distinction, as industrial parks are intended "for the relocation, rearrangement and attraction of local production establishments"[75]. Thus, they serve the explicit purpose of relocating scattered industrial production enterprises in the district to one common place for the purpose of easier environmental management. Because of their different functions, they are also differently managed. The IZ is managed at the provincial level by a special-purpose administrative agency – the IZMB – that is on par with the other departments of the line ministries, while the industrial park is managed at the district level by the district People's Committee and the Department of Industry and Trade. But, provincial authorities can apply for permission to convert industrial parks to industrial zones, and several IZs started as industrial parks.

3.1.2 Adoption of the industrial cluster as policy tool

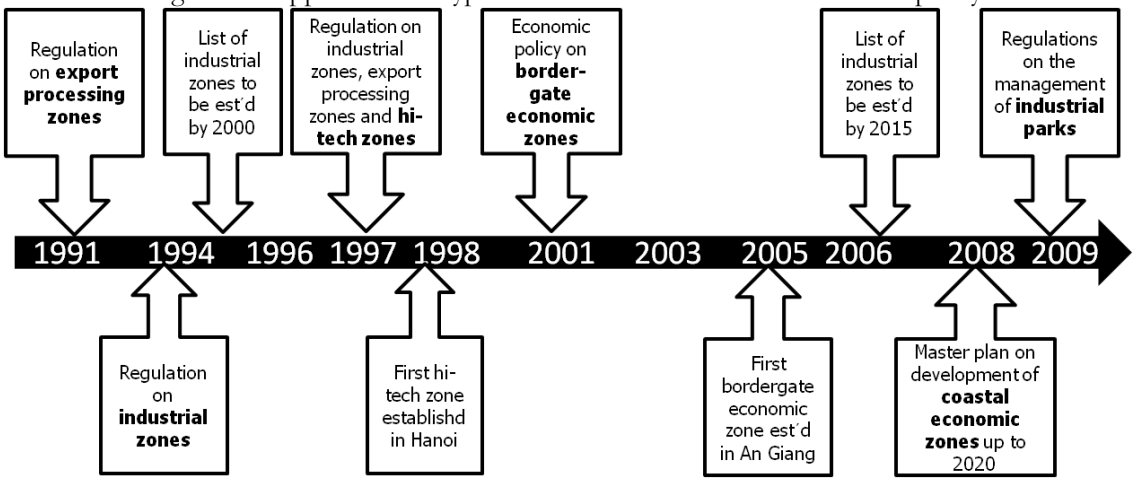
Evidence for the adoption of the industrial cluster by the Vietnamese government as a policy tool for the mission of industrialisation is found in the chronology of developments, which are captured in legislative acts. Because the function of law in Vietnam is state economic management (Bui Thi Bich Vien 2005) and the strive towards the rule of law finds expression in the complex legislative enterprise (Tenev et al. 2003:19), "economic" decisions are taken as or rather evidenced by legislative acts[76]. Annex 6 ("Chronology of industrial zone development in Vietnam 1991-2009") details all 32 legislative documents establishing and regulating different industrial clusters, and regulating aspects of their management. Based on this chronology, Figure 16 ("Appearance of types of industrial clusters in Vietnamese policy") provides an overview of when the various types of industrial clusters were first mentioned in legislative documents. Five years after the first export processing zone was set up, the Prime Minister passed a list in 1996 of 33 industrial zones that should be given preference for investment till 2000 (Decision 519/TTg of the Prime Minister dated 06.08.1996) Already in the following year, this list was supplemented with 17 more IZs (Decision 713/TTg of the Prime Minister dated 23.10.1996). Yet, the legislative acts are merely the plans on paper and not indicative of actual demand or supply. For instance, Hung Phu IZ of Can Tho City was one of the 17 IZs listed in Decision 713/TTg; in my field trip 15 years later in 2012, there was still nothing resembling an IZ. Another example is how nothing existed before or happened in the four years after the first mention of policy on border-gate economic zones (Decision 53/2001/QD-TTg of the Prime Minister dated 19.04.2001). But after the decision was taken to establish the first border-gate economic zone Khanh Binh in An Giang, the economic policy was amended in the same year. The following year, the Prime Minister approved the

[75] Article 2(1) of Decision 105/2009/QD-TTg of the Prime Minister dated 19.08.2009, promulgating the Regulation on the Management of Industrial Parks

[76] For instance, the establishment of the first hi-tech zone in Hoa Lac, Hanoi and the Khanh Binh economic zone in An Giang province were both marked by proper legislative documents in the form of Prime Minister "decisions" -- Decision 198/1998/QD-TTg dated 12.10.1998 and Decision 35/2005/QD-TTg dated 22.02.2005 respectively. See Annex 6 ("Chronology of industrial zone development in Vietnam, 1991-2009") for more examples.

plan for development of 115 industrial zones to be established, and 27 industrial zones to be expanded, before 2015. This indicates the ability of policy tools to lapse and rebound into policy-making consciousness. Shortly after, coastal economic zones made their first appearance in Vietnamese legislation. In total, 6 types of industrial clusters – export processing zones, industrial zones, hi-tech zones, border-gate economic zones, coastal economic zones, and industrial parks – were introduced within a decade and a half. The chronology of events demonstrates the adoption of the industrial cluster as a policy tool and its deployment throughout the provinces.

Figure 16: Appearance of types of industrial clusters in Vietnamese policy



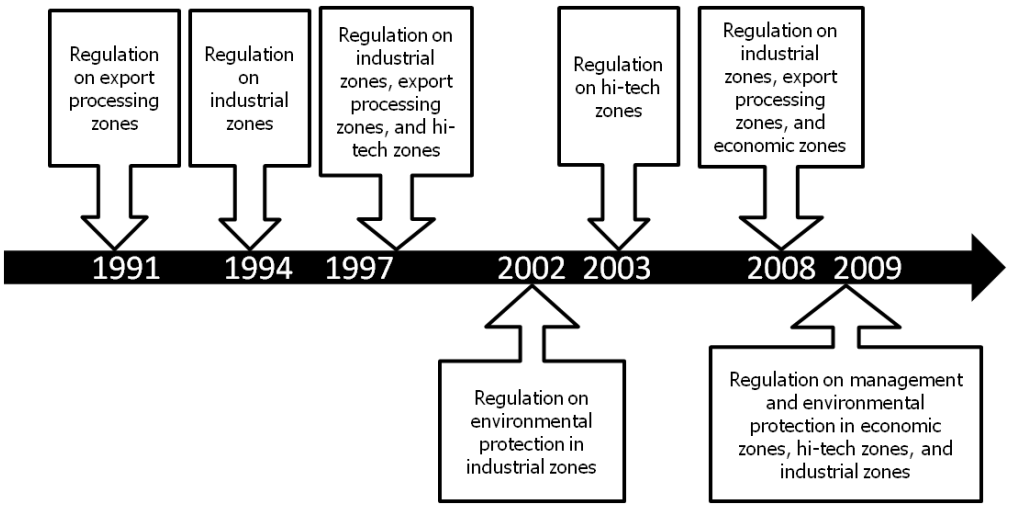
The timeline shows that the Vietnamese government had adopted the industrial cluster concept and steadily introduced more types of industrial clusters.

Another testament to the quick spread of industrial clusters is the vigour with which legislative efforts took place, and the reactionary nature of these legislative efforts. The chronology of the developments in the regulation of industrial zones, as listed in Annex 6 ("Chronology of industrial zone development in Vietnam 1991-2009"), shows that about 30 pieces of legislation were passed within a span of 15 years. A quarter of these deals with the regulation of industrial clusters, and another quarter concerns itself with the management structure, which has evolved significantly. Waibel (2003) had first suggested that the *ex post facto* legislative acts of the Vietnamese government sought to codify situations the government had not foreseen, to restore an appearance of having anticipated and planned the change. Figure 17 ("Regular changes in management regulations for industrial clusters") illustrates how the management regulations for the different types of industrial clusters struggled to keep up with the variety of industrial clusters that were introduced. The relatively short temporal gaps between the legislative acts (see also Annex 6: Chronology of industrial zone development in Vietnam 1991-2009), and the grouping together and then ungrouping again of types of zones, seem to suggest that the policy-makers might be reacting to new management dilemmas arising from new investment situations. For instance, hi-tech zones were first grouped together with industrial and export processing zones in 1997, then ungrouped in 2003, but the regulation on environmental protection in 2009 grouped them together again. The environmental protection regulations exemplify the confusion on the part of legislators in keeping up with the various types of industrial clusters[77]: the 2002 regulations on environmental protection exclude export processing and hi-tech zones although their management is regulated together with IZs, but the 2009 regulations on environmental protection then included hi-tech zones which were

[77] The clash between the management structure and environmental protection will be dealt with in more depth in Section 3.3.

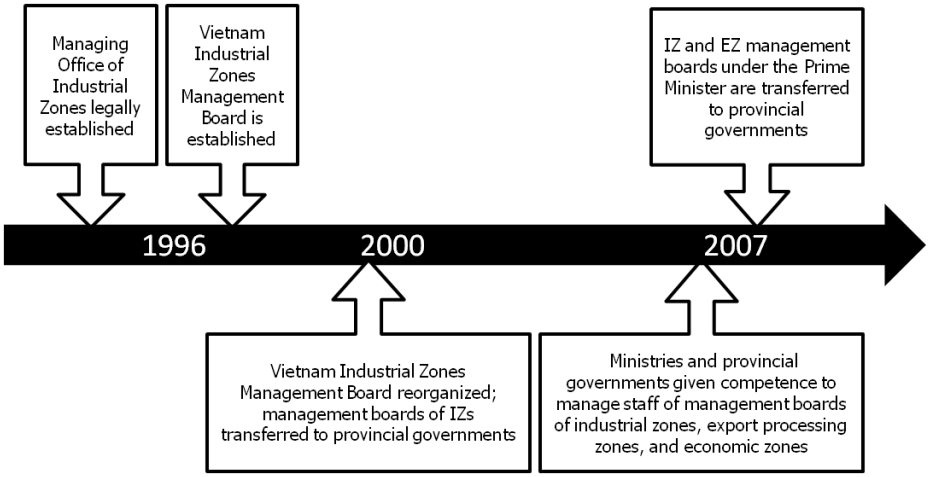
no longer similarly regulated as IZs and economic zones. Thus, the quick adoption of the industrial cluster led to a scramble to manage the different types of clusters and keep an oversight on how they are managed.

Figure 17: Regular changes in management regulations for industrial clusters



Despite regular updates to the regulatory framework, the proliferation in types of industrial clusters poses a challenge to future and further regulation.

Figure 18: Evolution of management of industrial zones



Though initially managed at the national level by a specially-mandated organisation with the management boards under the Prime Minister, this system gave way within a decade to one where there was no one national central organisation and ministries and provincial governments co-managed management boards.

The evolution of the national management of industrial zones further supports the interpretation of industrial zones going from an ad hoc change to being recognised as a policy tool for deployment across provinces. Figure 18 ("Evolution of management of industrial zones") shows this evolution: initially (1994-1999), there was a managerial board for each IZ, and the Prime Minister decided, based on the nature of production activity in the IZ, which state agency was to assume direct management (Article 18 of Decree 192/1994/ND-CP of the Government dated 28.12.1994). Even though industrial zones were implemented in localities, their management boards were not located there, but rather, in the central government. As IZs proliferated, management boards were transferred back to the provincial government in 2000. But even in 2007, the transfer was incomplete; provincial IZ management boards were then introduced formally as the provincial organisation-in-charge of all IZs within

the province[78]. The creation of the provincial IZ management board partially reconciles the direct management and administration of the IZ with its physical location[79]; and evinces the spread of IZs throughout Vietnam.

3.2 The industrial zone as symbol of modernity

3.2.1 The deployment of the industrial cluster as provincial policy tool

The ready adoption of the industrial cluster concept unfortunately poses difficulties for establishing the precise distribution and density of industrial zones. Besides the abundance of terms referring to different scales and types of industrial clusters, there is also the problem that several state agencies are involved differently with the planning and management of industrial zones, which has led to discrepancies in reported figures[80]. The Department of Planning and Investment and the Industrial Zone Management Board are both involved in planning industrial zones in a province, but only the latter implements the plan or maintains a keen overview of the state of development in an industrial zone. Thus, the set of figures provided by the national approving entity, the Ministry of Planning and Investment (MPI), appeared relatively conservative in face of the ambitious figures that the DPIs – and IZMBs initially too – provided me with, while the eventual numbers from the IZMBs are much smaller. Table 11 ("List of industrial zones approved for establishment in the Mekong Delta by the Prime Minister of Vietnam") lists the industrial zones approved by the Prime Minister in 2006 for establishment in the Mekong Delta, while Table 12 ("List of industrial zones presented by the Mekong Delta provinces") lists the IZs that the provincial governments in the Delta had advertised as existing and open for investors in 2008[81]. A total of 95 industrial zones in the Mekong Delta can be counted in Table 12 while the Prime Minister had only approved the establishment of 28 IZs listed in Table 11, and the MPI had reported the existence of only 21 IZs in the Mekong Delta as can be seen in Annex 4. Table 13 ("Comparison of the national and provincial plans for industrial zones in the Mekong Delta") shows the vast discrepancy between the national view of the state of development and the provincial view of the state of development of IZs in the Mekong Delta. One way of understanding this is that the industrial zones listed in Table 12 ("List of industrial zones presented by the Mekong Delta provinces"), which cannot be found in Annex 4 ("Map of industrial zones in Vietnam from MPI") or Table 11 ("List of IZs approved for establishment in Mekong Delta"), are unapproved at the national level, but have been planned by the provincial governments.

[78] At some point, separate management boards were set up for economic zones within the province, as was the case in An Giang for instance, but the management boards for EZs and IZs in An Giang, and presumably elsewhere, have been merged (*Interview: An Giang Economic Zone Management Board, 14.07.11*)

[79] But only to an extent. Section 3.3 elaborates on how the industrial zone remains "extra-local"

[80] This will be elaborated upon in Section 3.3: the Department of Planning and Investment and the Industrial Zone Management Board are both involved in planning industrial zones in a province, but only the latter implements the plan or maintains a keen overview of the state of development in an industrial zone.

[81] The list of industrial zones shown in Table X is based on an investment promotion booklet that the 13 Mekong Delta provinces collectively compiled to reach out to potential investors

Table 11: List of industrial zones approved for establishment in the Mekong Delta by the Prime Minister of Vietnam

Province	Name of industrial zone	Size/area allocated
An Giang	Binh Long	67 ha
	Binh Hoa	150 ha
Bac Lieu	Tra Kha	66 ha
Ben Tre	An Hiep	72 ha
Ca Mau	Khanh An	360 ha
	Hoa Trung	352 ha
	Nam Can	515 ha
	Song Doc	250 ha
Can Tho	Hung Phu	226 ha
Dong Thap	Song Hau	60 ha
Hau Giang	Song Hau	150 ha
Kien Giang	Thanh Loc	100 ha
	Rach Vot	100 ha
Long An	Cau Tram (Cau Duoc)	80 ha
	My Yen-Tan Buu-Long Hiep (Ben Luc)	340 ha
	Nhat Chanh	122 ha
	Duc Hoa III	2300 ha
	Thanh Duc	256 ha
	An Nhat Tan	120 ha
	Long Hau	142 ha
	Tan Thanh	300 ha
	Nam Tan Tap	200 ha
	Bac Tan Tap	100 ha
Soc Trang	Tran De	140 ha
	Dai Ngai	120 ha
Tien Giang	Tau Thuy Soai Rap	290 ha
Tra Vinh	Long Duc	100 ha
Vinh Long	Binh Minh	162 ha

Source: Decision 1107/QD-TTg of the Prime Minister dated 21.08.2006 approving the planning on development of industrial zones in Vietnam up to 2014 and orientation up to 2020.

Table 12: List of industrial zones presented by the Mekong Delta provinces

Province	Name of IZ/ EPZ/EZ; Area (ha)	Province	Name of EZ; Area (ha)
AN GIANG	Binh Long IZ; 30.7 ha Binh Hoa IZ; 131.8 ha Vam Cong IZ; 198.8 ha Vinh Xuong IZ; 20 ha Tinh Bien Bordergate EZ; 9255 ha Vinh Xuong Bordergate EZ; 9916 ha Khanh Binh Bordergate EZ; 7412 ha Hoa An Industrial Group** Tay Hue Industrial Group** Long An Industrial Group** Vinh Te Industrial Group** Vinh My Industrial Group** My Phu, Khanh Hoa Industrial Group** Tri Ton Industrial Group**	**KIEN GIANG**	Thanh Loc IZ Complex consisting of Thuan Yen IZ and Tac Cau IZ; 458.35 ha Thuan Yen IZ; 173.737 ha Tac Cau IZ; 68 ha Xeo Ro IZ Complex consisting of Kien Luong IZ and Kien Luong II IZ; 298 ha Kien Luong IZ; 3200 ha Kien Luong II IZ; 100 ha Vinh Hoa Hung Nam industrial cluster*; 60.61 ha An Bien industrial cluster*; 60 ha Vinh Tuan district industrial cluster*; 68.5 ha Kien Luong district industrial cluster*; 164 ha Rach Gia City industrial cluster*; 40 ha Giong Rieng district industrial cluster*; 99 ha
BAC LIEU	Tra Kha IZ; 63.87 ha Lang Tram IZ; 96.54 ha	**CA MAU**	Khanh An IZ; 360 ha Hoa Trung IZ; 352 ha

	Vinh Quoi IZ; 200 ha Ganh Hao IZ; 90 ha		Nam Can IZ; 515 ha Song Duc IZ; 250 ha
BEN TRE	Giao Long IP*; 101.468 ha An Hiep IP*; 72 ha Giao Hoa IP*; 270 ha	**SOC TRANG**	An Nghiep IZ; 251.13 ha Tran De IZ; 140 ha Dai Ngai IZ; 80 ha Cai Con Industrial Cluster*; 148.967 ha
TIEN GIANG	My Tho IZ; 79.14 ha Tan Huong IZ; 193.33 ha Long Giang IZ; 540 ha Petroleum service IZ; Soai Rap Shipyard IZ; 285 ha	**VINH LONG**	Hoa Phu IZ; 250 ha Binh Ming IZ; 132 ha Co Chien Industrial Line**; 250 ha Tam Binh Industrial Cluster*; 128.7 ha
LONG AN	Thuan Dao Industrial Park*; 113.9472 ha Thanh Duc IZ; 255.365 ha Vinh Loc IZ; 255.182 ha Nhut Chanh IZ; 125.27 ha Tan Buu IZ; 99.5 ha Tan Buu Long Hiep IZ; 104.91 ha Long Hiep IZ; 80 ha Duc Hoa I IZ; 274.23 ha Tan Duc IZ; 543.6536 ha Xuyen A IZ; 50 ha Duc Hoa 3 IZs; 2300 ha Long Hau IZ; 300 ha Tan Kim IZ; 116.7 ha Dong Nam A IZ; 396 ha Nam Tan Tap IZ; 244.74 ha Cau Tram IZ; 78.08 ha An Nhut Tan IZ; 119.89 ha Tan Thanh IZ; 768 ha	**CAN THO**	Tra Noc I IZ; 135 ha Tra Noc II IZ; 165 ha Hung Phu I IZ; 262 ha Hung Phu II IZ; 134 ha/ 78 ha Thot Not I IZ; 150 ha Thot Not II IZ; 800-1000 ha
		HAU GIANG	Hau River IZ; 290.79 ha Phu Huu A Concentrated Industrial Cluster**; 246.35 ha
		DONG THAP	Sa Dec IZ; 132 ha Tran Quoc Toan IZ; 180 ha Hau River IZ; 300 ha
		TRA VINH	Long Duc IZ

* These terms were used by the provincial governments, the source of the data, themselves. However, it is most likely that they refer to industrial zones. ** What these terms refer to is unknown. They are not defined in any legislation. Compiled by author, based on investment information catalogue (Mekong Delta Provinces 2009)

The second cause for discrepancy is definitional. When could an IZ be considered "established"? What is the minimal level of occupancy rate and infrastructure development required? Some IZs have been physically established but have no investors[82]; others gradually expand their infrastructure as investors move in gradually. In semi-structured interviews with the IZMBs of the Mekong Delta[83], an inflated figure was often first given. It was upon further questions about the state of development in each industrial zone that the interviewees then revealed that most of the IZs were "in development" – usually meaning that the land had been identified and was being cleared – or merely a plan. Table 14 ("Provincial interviewees' account of industrial clusters in operation in the Mekong Delta") shows the results of the interviews with the IZMBs in the provinces of the Mekong Delta. Sometimes, different departments within the same IZMB gave different numbers when asked how many IZs there were. In four interviews with various divisions of the Soc Trang IZMB, I received different answers about how many IZs there were. In Hau Giang, the higher-ranking official gave me a large figure based on planning targets and spoke of successful attraction of investment, but this was contradicted by the lower-ranking officials when he left the interview room. Hence, I consider the figures for "actually operating" IZs to be inflated. I personally visited some of the IZs said to be existing[84] and found some of the IZs had been set up but are actually empty and devoid of investor activity, while others have been merely "decided" on and were missing both infrastructure and factories.

[82] This explains why in Table 8 ("Statistics on Vietnam's industrial zones, 2010") from the World Bank, the "number of IZs" was differentiated from "currently operational IZs".

[83] As mentioned in Chapter 1, I was not granted permission to work in Dong Thap. Thus, when I refer to the Mekong Delta, I refer to data I collected from 12 of the 13 provinces there.

[84] See Section 4.2.1 "The unpromising appearances of the industrial zones" where the results of this "ground-truthing" are discussed.

Because the land compensation process for confiscated land takes time, and there is no government body responsible for confiscated but un-used land, the quality of information depends on the local government (Thi Bich Tran et al 2009 cited in Malesky 2004). This in-between-ness of most of the IZs in Vietnam is reflected in Annex 4 ("Maps of industrial zones in Vietnam"), where the colour-coding is meant to indicate which IZs are actually existing, and which ones are going to exist, but as good as existing for the purposes of counting.

Table 13: Comparison of the national and provincial plans for industrial zones in the Mekong Delta

Province	National plan of 2006	Area allocated (hectares)	Provincial plans as of 2009	Area allocated (hectares)
An Giang	2	217	7	26964,30
Bac Lieu	1	66	4	450,41
Ben Tre	1	72	3	443,46
Ca Mau	0	0	4	1477
Can Tho	1	226	6	1724
Dong Thap	1	60	3	612
Hau Giang	1	150	2	537,14
Kien Giang	2	200	12	4790,19
Long An	10	3540	33	8350,45
Soc Trang	2	260	4	620,09
Tien Giang	1	290	4	1097,47
Tra Vinh	0	0	1	100
Vinh Long	1	162	4	760,70
Total	23	5243	87	47927,24

Compiled based on Decision 1107/QD-TTg of the Prime Minister of 21.08.2006, and the investment broschures and booklets from the provinces

Table 14: Provincial interviewees' account of industrial clusters in operation in the Mekong Delta

	Industrial Zones		Industrial Parks	
Province	**Reported**	**Operating**	**Reported**	**Operating**
An Giang	5	2	>20	2
Bac Lieu	3	1	13	0
Ben Tre	7	2	16	0
Ca Mau	4	/	8-10	0
Can Tho	8	2	5	/
Hau Giang	/	2	/	/
Kien Giang	5	0	2	0
Long An	30	12	40-120	13
Soc Trang	6	1	11	0
Tien Giang	8	3	19	4
Tra Vinh	4	1	/	5
Vinh Long	5	2	14	0
TOTAL	**85**	**28**	**148-230**	**24**

Compiled based on interviews with Industrial Zone Management Boards and the Departments of Industry and Trade in each province.

This example from the Mekong Delta not only alerts us to the (un)reliability of figures concerning the industrial clusters in Vietnam. The numbers of IZs reported by the provincial governments also attests to the ready adoption of the industrial cluster policy tool by the provinces. The previous Section 3.1 presented the development of the industrial cluster concept in Vietnam from the perspective of the central government. While the dissemination of the concept might have happened via the central government, its deployment is not dependent on the central government's policy-making. Although the industrial zones have to be approved centrally by the Prime Minister, they are planned for locally by the provincial governments. This explains why more industrial zones are reported

by the provincial governments than those approved by the Prime Minister, as seen in Table 13 ("Comparison of the national and provincial plans for industrial zones in the Mekong Delta"). The discrepancy in figures allows for the inference that the industrial zone has become a policy tool of the provincial governments for attracting investment.

3.2.2 Symptom of the Vietnamese "achievement disease"

Despite not having a true overview of the state of development, the Vietnamese government has plans to establish even more IZs and other types of industrial clusters: Annex 5 ("Map of planned industrial zones in Vietnam") showcases the "master plan" for developing more IZs, reflecting the Vietnamese government's "vision up to 2015 with a view to 2020". While the ambition underlying these plans implies the success of IZs, the average national occupancy rate is merely 32.5%[85] (GSO 2008). The Vietnam Chamber of Commerce and Industry estimated that the occupancy rate in the Mekong Delta's IZs is probably only 22% (Vietnam Net Bridge, 17.10.11). When the Government announced plans to add 260 more IZs by 2020 in order to raise the total industrial land in Vietnam to 200,000 hectares, the plans were met with fierce opposition of National Assembly deputies (Vietnam Net Bridge, 20.11.11). But the Department of Economic Zones Management of the MPI insisted that the land is not wasted, on the basis that industrial land is more productive than agricultural land, and projected full occupation of existing IZs by 2015 (Vietnam Net Bridge, 20.11.11). In an earlier analysis of the Vietnamese socio-economic development plans which primarily fall under the responsibility of the MPI, the Vietnamese government's, or rather, the Ministry's conception of development was found to be focused on the economy with environment and social goals playing a rather limited role (Tan 2012). This insistence on industrial zones exemplifies its miscast prioritisation of the rationale of economic productivity over other socio-ecological considerations.

The eagerness for industrial zones has hence been criticised by the former deputy prime minister Vu Khoan as the latest of many "investment waves"[86] that have swept over Vietnam since the *Doi Moi* started (Vietnam Net Bridge, 21.10.11). The media criticised the registration of "virtual" investment projects in the provinces as a result of the decentralisation mechanism in permission-granting, and the belief held by local authorities that large projects would aid economic development, naming this the "achievement disease" of local authorities (Vietnam Net Bridge, 18.11.11), or what Vo Tri Thanh et al (2012) term negative meritocracy and term-of-office thinking. Moreover, investors apparently register investment projects without the intention to actually invest, but merely as a strategic move, because the rise in land prices would allow them to transfer their investment licenses to other investors for a profit. The provinces had also fiercely competed for foreign investment, and this had led to welfare losses at the aggregated national level (Phi Vinh Tuong 2011:337). The IZs' objective performance in bringing about economic development was actually poor, which is reason to reconsider their use as policy tools (Penrose and Dinh Tuan Minh 2010).

[85] Apparently the average occupancy rate in export processing zones is about 66.2% while industrial zones only achieve 36.5%. High technology zones see the lowest occupancy rates at 6.0%. These are merely reported statistics, and the reality might be more dismal.

[86] Breweries, blast furnace plants, sugar refineries, motorbike assemblies, offshore fishing, seaport development were the investment waves that hit Vietnam before the industrial zone and economic zone development wave.

In its report on improving the efficiency of public investment regimes in Vietnam, a consortium of donor organizations identified the following reasons as "driving the industrial park boom"[87]: (i) the land regime allows expropriation of land for large-scale projects and compensation rates based on the former (usually agricultural) use of the land rather than future value of the land, such that the farmers are the ones subsidising the construction of IZs through livelihood losses; (ii) the tax regime allows all tax revenues from industrial production and industrial land to accrue solely to the provincial governments; (iii) the ability of provincial governments to sidestep the regulations that seek to ensure a balance between demand and supply of IZs by requiring existing IZs to first reach a certain occupancy rate before establishing more; and (iv) "the current spatial planning has largely been driven by infrastructure development plans with inadequate attention given to the overall efficiency" (Joint Donor Report to the Vietnam Consultative Group Meeting 2011:62-66).

These reasons provide a supplementary political-economic perspective and also emphasise the implementation issues related to central-local relations. The Mekong Delta provinces especially stand to benefit fiscally from establishing IZs, since they have been recognized as having "extremely difficult socio-economic conditions", which qualifies them for financial assistance for the construction of industrial infrastructure of their first and second IZs[88]. This is the reason why most of the Delta provinces have established "public non-business units with revenue sources"[89] as infrastructure developers, instead of waiting to attract private investment funds. The taxation regime also provides an important insight into the research question of poor environmental management in the IZs: the companies in the industrial zone are a source of income for the provincial governments. Despite the well-substantiated and contextualised explanation for why there is an industrial zone boom in Vietnam, the Joint Donor Report (2011) suggests that inefficient public investment regimes is the cause, and implies that fixing the public investment regime would also solve the problem altogether. But such an account sees the IZ purely as an economic decision, and does not address sentimental, cognitive, or ideological components. It certainly does not explain why the provincial governments speak of IZ development in inflationary, boasting terms, which is well expressed by the media-coined term "achievement disease" (VietNam Net Bridge, 18.11.11). The lack of coherence between the various master plans of the central government itself also point to the symbolical value of the IZ for the government. The second weakness of this otherwise persuasive account is that the provincial governments are given decisive agency. State business interests are also implicated: Cheshier (2010) noted that many joint stock corporations have moved away from their original production areas and activities and are now involved in industrial zone development. It has been observed that despite the explicitly 'planned' nature of the IZ, the role of the State

[87] This is not unique to Vietnam. Yang and Wang (2008) reported of a similar development zone fever in China, Suzhou, and concluded that it is a "specific mode of governance" comprising internal contradictions in land management system, contradictory incentive/constraint structures of local government agencies, and local mutations of sectoral regulations on the transformation of farmland property rights. They conclude that the Chinese state can be better seen as a "dynamic, complex, heterogeneous and self-conflicting institutional ensemble, in and through which powers and interests of different levels of the state are contested, negotiated and mediated" and the developmental zone fever is really an issue of governance in local development (p1039)

[88] Article 2 of Decision 26/2008/QD-TTg of Prime Minister dated 05.02.2008 provides for the implementation of mechanisms for socio-economic development "to raise the central budget support to VND 70 billion or less for industrial park investment in localities meeting the criteria prescribed in Decision No. 183/2004/QD-TTg of 19.10.2004" and "to provide central budget support of VND 70 billion or less for localities meeting the criteria prescribed in Decision No. 184/2004/QD-TTg to build infrastructure of the second industrial park selected by localities".

[89] These are pseudo-companies set up by the local authorities to undertake the construction of infrastructure. Their "revenue sources" come from the state so they are explicitly named "non-business units". See Section 4.1.2 "The irony of public non-business units: the state playing investor" for more information.

and its local manifestations cannot be exaggerated since non-state players actually initiate and participate in planning and implementation (Waibel 2003).

To back-track a little, who the proponents of industrial zones are might help throw light on the ideological aspects of the industrial zone, as well as the other actors who might not have been directly identified with the boom. The MPI is the designated mastermind behind the master plans for industrial zone and economic zone development[90]. Its planning function is supplemented by its oversight mandate: proposals sent in by the provinces are reviewed by the Ministry, and the provincial industrial zone management boards report to the Ministry as well. Yet, this oversight has not helped its planning, since the latest plans for industrial zones that it presented to the National Assembly drew criticism from other ministries and delegates (VietNam Net Bridge, 20.11.11). Its ambitious plans, and its even more ambitious rebuttal that the existing industrial zones will be fully occupied by 2015, hint at the extent to which it buys into the industrial cluster as a panacea. Its think-tank, the Central Institute for Economic Management, which publishes the Vietnam Economic Management Review, released a special issue on promoting industrial cluster development in Vietnam[91] around the same time the Ministry presented its controversial plans (Central Institute for Economic Management 2012:esp 80-114). This special issue shows how the industrial cluster model has permeated the Vietnamese policy-making research circles. This is perhaps unsurprising given the approving nods from international donor organizations. The UN Commission for Trade and Development (UNCTAD) in its review of Vietnamese investment policy stressed the importance of the industrial zones in attracting foreign direct investment (UNCTAD 2008:17ff, 58ff). Likewise, the United Nations Industrial Development Organisation (UNIDO) also recommended the industrial zone in its report on the impact of foreign direct investment on industrial development for "operating within industrial zones seems to translate into differences in productivity and technical efficiency and this invariably impacts on the industrial performance at the provincial level" (UNIDO and MPI 2012:113) even though it admitted that "policy conclusions are therefore not easily drawn on the basis of this sample" used in its statistical analyses (UNIDO and MPI 2012:110). The industrial zone itself comes highly recommended through research for policy-making, and the zealous establishment of industrial zones cannot be credited solely to opportunistic behaviour on the part of the provincial governments in exploiting loopholes in the tax and land regimes.

The transformation of the concept of industrial clusters from a policy tool to an unquestionable objective could also be, to an extent, explained by irregularities in the institutional set-up for planning and reporting that is skewed towards the former. Planning at the provincial level is duplicated: both the DPI and the IZMB are involved in planning and calling for investment[92], although the IZMB additionally implements and manages. But the IZMB not only reports to the DPI, it also reports to the Department of Labour, Invalids and Social Affairs for labour issues, and the DoNRE for environmental issues, *etc.*. Hence, when I asked for information on employment

[90] Article 24 of Decree 29/2008/ND-CP of the Government dated 14.03.2008 on regulations on industrial zones provides that the MPI is to lead and coordinate with the Ministries of Construction, Natural Resources and Environment, National Defense, Industry and Trade, and relevant provincial People's Committees to prepare the general master plan for development of industrial zones and economic zones for submission to the Prime Minister for approval.

[91] The contents of this special issue were briefly discussed earlier in Section 3.1.1.

[92] In investment brochures I collected from the 12 Delta provinces, the brochure from the province, usually from the Trade and Investment Promotion Office under the DPI) and the brochure from the IZMB contained different details about how many industrial zones there were.

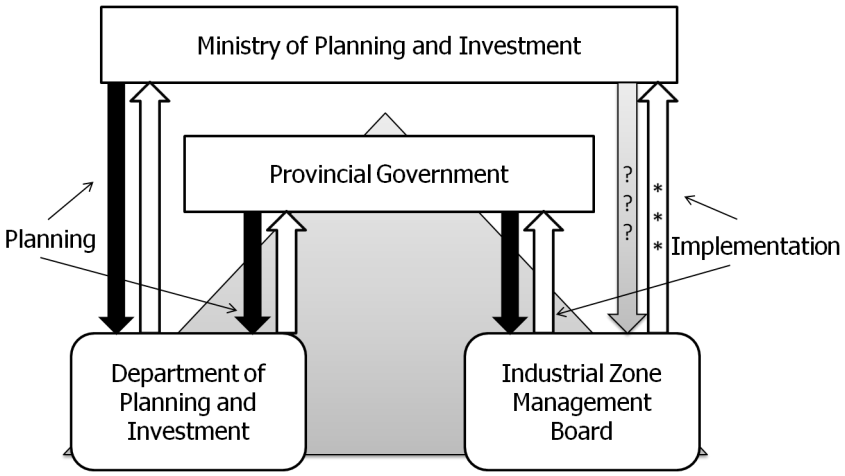
generated and state of environmental protection during my interviews with the DPI, I was usually told that they were not responsible and I should ask for information at the relevant departments. With such an institutional set-up, the duplication in planning mandates could skew the balance towards planning based on considerations of economic efficiency, since the assessment of the DPI and MPI would be based only on investment performance rather than including the other social and ecological issues, with which they are unfamiliar as they are reported elsewhere. The MPI defended its plans to establish more IZs with the argument that industrial land is more productive than agricultural land (VietNam Net Bridge, 20.11.11), which is revealing of the logic of decision for the Ministry and its DPIs. Indeed, the National Assembly warned that most localities focused on investment, or productivity, and were reckless about environmental protection (Viet Nam News, 30.09.11). The institutional set-up around planning and managing industrial zones appears to have privileged the logic of economic productivity providing industrial clusters as a policy tool with insulation, and prejudiced the other socio-ecological considerations.

That the IZMBs report to several ministries is an anomaly, because provincial state administrative agencies only report to one (its own) ministry other than the provincial authorities. The evolution of the management structure for industrial zones at the national level reveals how the anomalous situation came to be. Initially, the Prime Minister retained the discretion to assign ministries to assume direct management of the various IZs, depending on the nature of the operations of the IZ. The first permanent entity to be established with the mandate of "assist(ing) the Prime Minister in directing the preparation, construction, development and management of industrial zones, export processing zones and high-tech zones already planned and ratified" (Article 1, Decision 969/TTg dated 28.12.1996) was the Vietnam Industrial Zones Management Board ("VIZB")[93]. It was placed under the Prime Minister, and was to coordinate with the Ministries, the ministerial-level agencies, the agencies attached to the Government and the Provincial People's Committees to elaborate legal documents, policies and plans pertaining to the construction, development and management of IZs (Article 2, Decision 969/TTg). Thus, though not a ministerial agency, it moved at the inter-ministerial level. The following year, the Government passed another decree[94] to finally specify the relations between the various ministries and this VIZMB in relation to the management of the IZs. The MPI was assigned a dominant role in that it had the vital tasks of elaborating the overall planning for the development of IZs and issuing the model regulation on management, but the provincial IZMBs were to report annually to the VIZB (Article 23 of Decree 36-CP dated 24.04.1997). Although the state management system contemplated the VIZB as an intermediary for communicating the local difficulties and challenges in implementation of MPI-devised plans and rules, nothing in the rules explicitly foresaw close coordination with the MPI in this respect. The duplication in IZ planning in the provincial set-up could be related to this early separation of planning from implementation.

[93] Decree 192-CP of the Government dated 28.12.1994 did not specify the national state administration set-up, only mentioning the IZ management board and the provincial people's committees. Article 18 leaves it up to the discretion of the Prime Minister as to which state agency should assume direct management of the industrial zone, depending on the nature of its operations. Decision 595/TTg of the Prime Minister dated 27.08.1996 established the Managing Office of Industrial Parks. But this entity only lasted 4 months before the VIZMB replaced it.

[94] Decree 36-CP of the Government dated 24.04.1997 issuing the regulations on industrial zones, export processing zones, and hi-tech zones.

Figure 19: Ambiguously-defined mandates of provincial organisations-in-charge with regard to industrial zones planning



The Department of Planning and Investment receives its mandate to plan from both the Ministry of Planning and Investment, and the provincial government; it also reports to both. The Industrial Zone Management Board is a provincial administrative agency sui generis: it is mandated by the local provincial government but has no ministerial equivalent, reporting instead to the Ministry of Planning and Investment, and other Ministries as well.

The VIZB and its tasks and functions were taken over by the MPI in 2000 (Decision 99/2000/QD-TTg dated 17.08.2000). While having the effect of clarifying the overlaps in mandates, the abolition of the VIZB created an anomalous situation in the Vietnamese state management administrative structure, which is characterised by a mirroring of the national government structure at the local government level. Although the IZMB is hierarchically equivalent to other departments (which report to their respective ministries at the national level) in the local government, it has no ministerial equivalent. Figure 19 ("Ambiguously-defined mandates of provincial organisations-in-charge with regard to industrial zones planning") presents a schematic view of the instruction and reporting flow with regard to industrial zones in a province. Departments are the provincial equivalents of the various ministries; they consult and report to provincial governments and also their respective ministries. This horizontal and vertical reporting is a unique feature of Vietnamese decentralisation and local government (Fforde 2003:12). In this sense, the IZMB is an anomaly in this neat ministry-province-department system: they are the provincial organisation-in-charge for all industrial zones, but they have no ministerial equivalent. The practical purpose of this might have been to achieve the "one-stop-shop" offer to potential investors: the IZMB is the only entity with which a potential investor in an IZ has to deal with, as opposed to the various departments from which a potential investor outside of an IZ would have to obtain clearance from. Nonetheless, this has the practical effect of according the IZs, or the IZ as such in an abstracted sense, a unique extra-system position. The very existence of a special organisation for industrial zones outside the ministry-department order reinforces the importance of having industrial zones.

This subsection has shown how the industrial zone became symbolical. It started as a policy tool for achieving the Vietnamese development vision of "industrialisation and modernisation by 2020". But the separation of its planning from its implementation gave its reproduction a certain momentum. Decentralisation and the ability for provincial governments to plan and call for investment in IZs, that were not necessarily centrally-approved, then added to this reproduction momentum it had gained. While there are certain loopholes in the tax and land regimes that might have encouraged provincial governments to supply more IZs than is actually demanded by the investment market, this is only the incentive-behavioural aspect. International donor organisations are strong

advocates of the industrial zones despite the reported problems with provinces going overboard, and the model of the industrial cluster has influence on Vietnamese policy-making circles. The observed phenomenon of "investment waves" and "achievement disease" point to another cognitive-ideological aspect: *en vogue* investment projects are equated with achievement. The industrial zone is seen as a sign of industrialisation, regardless of its contribution to local economic development. The institutional set-up props this symbolical status, such that the industrial zone is, other than being a symbol of modernity, also an "extra-local" type of place.

3.3 The extra-locality of industrial zones

3.3.1 Propagation of a conceptual space

I conceptualised the industrial zone as "extra-local" to express its foreign provenance. It is first and foremost a tool of developmental industrial policy, an internationally known and applied concept that was imported into the Vietnamese context. It is extra-local: non-local, and from outside of the location. Its subsequent manner of implementation and execution with regard to planning, construction and design, and management continues to perpetuate this "extra-locality", through physical and boundary markers and the imposition of uniformity in management model.

Its extra-locality begins with how the institutional set-up, starting with the planning process, is characterised by non-engagement with the location. The IZMB and the DPI are both involved in planning duties, and in interviews with both authorities in the twelve provinces, the engagement and participation of planning consultancies was often referred to (*Interviews: Ca Mau IZMB, 30.06.11; Tra Vinh IZMB, 04.07.11; Long An IZMB, 20.07.11; Chua Thanh District PC in Hau Giang, 16.11.11)*. These planning consultancies are without exception from outside of the province – usually Ho Chi Minh City, and some were businesses of the Ministry of Construction – and are mandated by the provinces to plan for industrial zones[95]. The consultants visit some sites in the province to consider their suitability as industrial production sites; location along a transport route is almost necessary for the Mekong Delta with its weak infrastructure. But there was no mention of solicitation of local opinion about potential resettlement, and the provincial state agencies declined to comment on how which parts of the proposals drawn up by the planning consultancy are taken up or decided upon. It appears that local "participation" does not happen even in the EIA phase, and is limited to the land clearance phase, when land compensation rates are announced (*Interviews: Households in Dong Phu Commune of Hau Giang, 10.11.11; Households in Mai Dam Commune of Hau Giang, 16.11.11*). Hence, exclusion and non-participation of the locals can be inferred from the circumstantial information about missing public participation even during the later-phased EIA. Section 4.2.3 provides more empirical examples of this exclusion of the local authorities and local ecology. Regardless of whether it is a planning consultancy or the provincial government that performs site selection, the determination of IZ locations apparently happens without the suggestion or participation of those intimately bound up with the very location.

[95] It was not possible to secure an interview with one of these planning institutes or consultancies. Three were approached and all declined.

Another way in which the institutional set-up perpetuates the extra-locality of the industrial zone is the anomalous position of its management board within the Vietnamese state administrative system. The previous Section 3.2.2 has demonstrated this with regard to the national-local set-up, but this anomalous situation persists even at the sub-provincial level. The provincial state administration system is organised thematically, but also geographical-territorially. The province is sub-divided into districts, (urban) districts into wards, rural districts into communes, communes into villages, and wards into units. The administration system follows this categorisation such that there are people's committees at the province, district and commune and ward levels, and the various departments have divisions and offices at the sub-provincial level. Hence, for instance, the various departments for investment, industry, environment, health, labour, *etc.*, manage their themes and issues depending on the divisions reporting on what is happening in their districts. In contrast, the provincial-level IZMB manages scattered plots of land throughout the province in various districts, but without district equivalents like divisions and offices. The practical effect of this anomalous management structure is the removal of the industrial zone from its physical site and original unit of management, as the case study of Tra Noc IZ in Chapter 2 already showed.

Picture 3: The similar design of industrial zone gates in the Mekong Delta

Whether in Bac Lieu, Can Tho, An Giang, or Hau Giang (clockwise), industrial zone are similarly gated. (Nov, Dec 2011)

Another aspect of its extra-locality is physical. The visual is a most apparent and powerful marker of distinction. The IZs I visited during field research were all similarly designed and constructed: an imposing grand gate along one of the few large interprovincial roads; two roads – one in, one out – behind the gate and flanked by plots of land for investors; and fences, funds permitting. Picture 3 ("The similar design of industrial zone gates in the Mekong Delta") shows what a typical IZ in the Mekong Delta looks like. These features are physical but also psychological in that they are boundary markers, and the distinction is intensified by the rural backdrop of rice-

fields against which these gates and fences of an explicit non-agricultural purpose stand. The physical distinction between the industrial zone and the location in which it stands is recreated in every one of the Vietnamese provinces. This physical reproduction enhances its extra-local and extra-territorial character.

The extra-local industrial zone is also designed to be highly uniform across Vietnam, regardless of its local social, economic, environmental context. This is achieved through the subjection of all industrial zones in Vietnam to one management model[96], elaborated in the management regulations Decree 29/2008/QD-TTg dated 14.03.2008 and Circular 08/2009/TT-BTNMT dated 15.07.2009. The IZMB manages the IZs in the province by gathering information about its operations and coordinating with other provincial departments on their thematic issues. In a province with multiple industrial zones, the IZMB would work together with multiple infrastructure developers. These (private) investors are to be selected via a public tendering process. For developing the infrastructure in an industrial zone, the IZMB leases to them the land of the industrial zone for 50 years. The infrastructure developer clears the land, builds up the infrastructure – roads, lights, wastewater treatment plant, fence – in the park, prepares the lots for calls for investment in accordance with the designed profile of the industrial zone in the planning documents of the province, calls for investment, and concludes sub-leasing agreements[97] with investors for specific lots of land in the industrial zone. This attempt to harmonise the IZs across Vietnam confers upon it the nature of a conceptual space that is easily replicated.

Ironically, the difficulty in replicating a successful IZ has reinforced the desire to do so. For instance, while it would make sense that the provincial governments engage the private sector for non-vital infrastructure development, most of the provinces were unable to attract private investors to develop their infrastructure, and thus the provincial governments had to intervene and establish "public non-business units" (*don vi su nghiep*) to take over the role of private infrastructure developer. These "non-business units" are not proper business enterprises[98], although they have the "right to financial autonomy and self-responsibility" (Decree 43/2006/ND-CP dated 25.04.2006), meaning they are to be run like businesses. Their "non-business" status stems from the source of their revenues: they are set up by the local state, using state budget funds, to achieve certain functions and tasks, and when they do make a profit, they are expected to gradually self-finance more of their regular operations (Article 9 of Decree 43/2006). More examples of public non-business units and their relationship with the local state, and the implications for the public-private divide will be discussed in Section 4.1.2. It is introduced here to show how the acts of compliance actually thwarted the logic of IZs as industrial policy tools, and how the logic of sheer compliance allows public-funding-intensive IZs to exist, and ultimately, the reproduction of IZs across Vietnam to continue.

[96] An exceptional few born of joint ventures with foreign governments have different management models. An example is the Vietnam-Singapore Industrial Park in Ho Chi Minh City.
[97] This agreement covers the leasing rate for the lot of land, the maintenance fee payable for the upkeep of infrastructure within the industrial zone, as well as the wastewater treatment fees (water supply contracts are concluded with the public utility works).
[98] The definitional Article in the Vietnamese Enterprise Law does not provide a definition for "non-business unit". Decree 43/2006/ND-CP dated 25.04.2006 on the right to autonomy and self-responsibility for performance, organisational apparatus, payroll and finance of public non-business units. Circular 71/2006/TT-BTC dated 09.08.2006 on guiding implementation of Decree 43/2006/ND-CP for non-business units' autonomy.

The momentum generated by its propagation mechanism has amounted to a certain path dependency, because information about its disadvantages and (socio-ecological) costs do not seem to effect reconsideration. The dismal environmental record of industrial zones (Tran Thi My Dieu et al. 2003; Viet Nam News 02.11.10) has been widely reported. The EIAs that should have preceded the construction of investment projects like the IZs are not implemented (Viet Bao, 08.01.06; VietNam Net Bridge, 22.11.10), and the IZMBs expedite EIAs (Le Thi Van Hue and Sajor 2011:171). Wastewater treatment appears to be relatively uncommon despite legal regulations obliging the industrial park management boards to implement a wastewater treatment system (Le Quang Thong and Nguyen Anh Ngoc 2004). Unauthorised abstraction of groundwater is another problem (Nuber 2009). Thus, the adoption of the industrial cluster was not wholesale: while key aspects such as provision of infrastructure and favourable investment conditions are without doubt implemented, the other logic based on the environmental concept of zoning does not appear to bear much weight[99]. Industrial clusters arguably improve environmental management through the concentration of industrial production entities in one location, by reducing the occurrence of scattered pollution sources located near dense residential areas, and by providing opportunities for shared and presumably more economical waste treatment systems (Phung Thuy Phuong 2002:20-22). While the active law-making in environmental protection regulations in recent years[100] suggests that the issue has finally entered the policy agenda (NA 2011; Standing Committee of the NA 2011; VEA 2012); implementation remains quite a different matter, and most importantly, the incurred and pending environmental damage does not seem to deter or caution provincial governments from their pursuit for more.

The increasingly apparent negative social impact of the IZs has also not amounted to a significant braking force to the continued IZ planning. The Ministry of Agriculture and Rural Development estimated that the conversion of 500,000 hectares of agricultural land to industrial land has affected the lives of 628,000 farmer households, amounting to livelihood instability for 950,000 workers and more than 2.5 million people (Ming Duc 2008). Conversion of agricultural land to industrial land in the North has been observed to affect household food security[101] (Nguyen Thi Dien et al 2010, Nguyen Van Suu 2009). In the Mekong Delta particularly, much of the land cleared or earmarked for IZs are actually fertile fields that could be put to better use. In fact, farmers refrain from investing in their land once the plans for land conversion are communicated to them, for fear of losing their investments when the land is taken (VietNam Net Bridge, 09.12.11). But IZs can take years to develop, and sometimes farmers have to wait for a couple of years before they receive their compensation sums. Even then, before the IZ is running and operational, the compensation money might be spent with no alternative job in sight (Thanh Nien News, 03.01.10; VietNam Net Bridge, 09.12.11). As these problems associated with land clearance and compensation become more obvious, farmers are becoming more vocal. In Vinh Long, farmers opposed the plans for converting their fields to industrial land on the basis that their land is 50% more productive than what their province had reported to the government (Viet Nam News, 16.08.10). Likewise, in Tien Giang, farmers are refusing to farm to protest the earmarking of their land for development of an IZ and a golf course (Viet Nam

[99] But the first allusion to the ecological advantages of industrial clustering only surfaced in the management regulation on industrial parks, not zones, from 2009, which specifically refers to the purpose of relocating polluting industries to facilitate environmental monitoring (Article 3, Decision 105/2009/QD-TTg dated 19.08.2009).

[100] The regulatory framework for environmental protection in industrial zones will be discussed in detail in Section 5.2.

[101] Perkins and Vu Thanh Tu Anh (2010) opine that "the total land area in Vietnam, by way of comparison, amounts to 33 million hectares so the industrial zones take up a total of .67% of the total land area, a miniscule fraction" (p24).

Net, 21.07.11). Yet, more IZs have been approved even when existing ones struggle to fill up or fulfil their promises of more industrial production or employment generation. This begs the question of whose oversight matters for the decision-makers, and what the decision logic is.

The IZ had succeeded in boosting industrial production and providing a source of economic growth in other Asian economies. The concept behind the IZ was simple: if local governments provide the right investment and operation conditions, foreign investors will arrive. It was the translation of this ideal fostering investment environment into policy that turned the Vietnamese IZ into a certain type of space for industrial production and growth, a conceptual space, which had a self-propagation mechanism. The IZ as conceptual space is marked by "extra-locality": the primacy of securing economic growth through foreign investment led to the creation of an institutional set-up that: (i) already excluded the local authorities and ecology during planning, essentially ignoring the adequacy and contingencies of the place in which it is being implanted, (ii) put its management in the hands of provincial authorities and separated its physical location from the level of its administrative management, (iii) was incongruent with the design of central-local relations in Vietnamese state administrative system, thus weakening oversight and management and creating a slant towards ambitious planning, and (iv) conferred the industrial zone with the status of a symbol of modernity. The typical and rather uniform appearance of an IZ reinforces its extra-locality, its having being implanted. The institutional set-up has gathered considerable self-propagation momentum, such that plans for more IZ continue despite evidence of their lack of success and non-economic socio-ecological costs.

3.3.2 The industrial zone as out of place

As a result of its extra-locality and easy replication throughout Vietnam, the IZ is also "out of place", and this is most apparent in the Mekong Delta. The figures I presented in Section 3.2.1 show that the Mekong Delta provinces are bent on establishing more IZs despite the relative lack of success their existing IZs have. Such a characterisation – of the IZ being out of place – is normative: I confess I do not think many of the Delta's IZs should have been established, because of their socio-ecological costs. The case of Tra Noc presented in the previous chapter shows how the effects of the IZ's operations are of local consequence, but the local can be said to be of little consequence to the IZ's operations. Despite suffering from the industrial pollution caused by the production activities inside the IZ, none of the residents were able to directly influence the production activities of the polluting factories, short of physically disturbing and demanding a halt to production. The industrial zone is buffered from the local consequences of its operations because it is administratively carved out of its physical location. The IZ is also out of place in that it does not fit into the environmental management apparatus, and hence encumbers its effective operation. Environmental protection in the province falls under the DoNRE, and in the territorial expanse that a Department of Environment is to cover, there are a few enclaves where the Department is to relinquish its jurisdiction. "What belongs to the CEPIZA, DoNRE will not touch." (*Interview: Can Tho EPA, 13.09.11*).

The awkwardness of the IZ in the rural Delta landscape can be understood as the latest manifestation of the Vietnamese state's modernist aspirations. The Mekong Delta has long been a focal point of the Vietnamese state's rural development programs which concentrate on rural modernisation (Taylor 2007). "Rural industrialisation is a longstanding objective that dates back to the 1950s Democratic Republic of Vietnam, and the objective has gone

through many phases and attracted many different rationales. To this day, planners entertain high modernist ambitions for the socialist industrialisation of the countryside." (Taylor 2007:12) But, this has been hindered by poor infrastructural network in the Mekong Delta and low literacy rates (Taylor 2007:16-19). Taylor borrows from Scott, whose thesis again finds resonance in the case of industrial zones in the Delta: "Attempts by the centralised states to impose on rural areas one-size-fits-all solutions, be they the privatisation of social services or the modernisation and industrialisation of agriculture, are inevitably doomed to failure because of the fatal simplifications they impose on invariably complex processes" (Scott 1998 cited in Taylor 2007:5).

3.4 Concluding remarks: the industrial zone as tool, space, and place

The introduction to the topic of industrial zones in the Mekong Delta has been working towards the proposition that the industrial zone plays multiple roles of policy tool, paradigmatic space, and symbolic place. This Chapter traced the evolution of the industrial zone from an imported novelty introduced by foreign investors in the wake of the *Doi Moi*, to its adoption as a tool of industrial policy – as evidenced by the *ex post-facto* regulatory framework, the proliferation of IZs and various types of industrial clusters. The dual nature of the industrial zone as plan and tool is bound up with one another. As far as I am aware, the MPI, who is solely responsible for planning for IZs, has not compiled any comprehensive reports on IZ development that also consider the IZs' socio-ecological impacts. It may be conjectured that the separation of planning power from accountability for implementation might be the reason why plans for setting up and establishing more industrial zones and industrial clusters continue despite actual efficacy and social and environmental costs. This separation of planning from accountability for implementation problems also allowed the industrial cluster concept to obtain a position of non-questionability, and as such dominance, in Vietnamese industrial policy.

The subsequent implementation of the industrial zone has built it up as a kind of paradigmatic space. The industrial zone is an area delimited for industrial production activities, governed by a different set of rules which facilitate business operations, and has the explicit purpose of increasing economic growth and bringing about industrial growth. The paradigm of the industrial zone coincides and aligns with the national developmental goal of industrialisation. The reactions to the occasional objection to further expansion or establishment of more industrial zones are telling. When a deputy in the Vietnamese National Assembly questioned the MPI's plans to establish more industrial zones, the director of the Department of Economic Zones Management in the MPI responded that "the plan for IZ development is based on targets for the period from now to 2020 including annual economic growth at 7-8%, contributions of industry and service sectors to gross domestic product and job creation in industry…overall, it is clear that industrial park land is more effective than agricultural land" (VietNam Net Bridge, 20.11.11). This example strikingly demonstrates the paradigmatic tone of the industrial zone. The Vietnamese or Mekong industrial zone, as such, is not merely a policy tool or a lot of land set aside as a place for production; it is also a space imbibed with the paradigm of figures-driven and not socio-ecologically inclined industrialisation.

The industrial zone is a symbol of the dream of industrialisation and modernisation. As related in Section 3.2, local state officials spoke of the IZs in their province with pride; all had provided an over-reported figure when they

were asked how many industrial zones there were in their province. I equated this tendency to over-report with an association of industrial zones with progress and growth. In the next chapter, I will relate how residents living near planned industrial zones spoke with optimism about promised jobs and better lives, and residents living near operating and polluting industrial zones saw themselves as having no choice because of their poverty. These are two different and yet similar discourses. The poverty common in the Mekong Delta, and the livelihood instability incident to it, has its residents accepting environmental injustice as a necessary step forward and pollution as a price of progress.

The industrial zones of the Mekong Delta are loaded with meanings that flow into one another. The industrial zone began experimentally as an investment project, and the initial success saw its replication and implementation as a policy tool towards the national objective of industrialisation and modernisation by 2020. The success cases and the adoption and portrayal of zones as a policy tool for the national goal of industrialisation have fed the perception of it as a symbol of progress and growth. Yet, its ambiguous record as a policy tool and the shaky evidence bolstering perceptions of industrial zones as symbols of growth and success, serve to demonstrate that the zone is more than a mere place of production, but rather a space, with its unique paradigm of industrial growth rationalising the extra-system conditions. This particular set-up for the industrial zone certainly contributes to its status as a policy tool that does not lend itself to revision or reconsideration. The industrial zone is policy tool, place, space and symbol simultaneously, and each of these meanings feed the other interpretations.

This Chapter has sought to demonstrate that the industrial zone as a place is infused with meanings, and these also vary across the levels of government. The national government and its ministerial executors consider it a policy tool with a proven record. The provincial governments have displayed an unquestioning fervour in their implementation of the national goal of establishing industrial zones throughout the country. Interviewees from the Departments of Planning and Investment as well as the Industrial Zone Management Boards across the provinces in the Mekong Delta often proudly mention the number of industrial zones the province has, glossing over the fact that most of them were actually on paper and not operating. The pride associated with the number allows the interpretation that the provincial governments and their executing departments have come to view the industrial zone as a symbol of progress and modernisation in the province. Things get interesting at the level of the district, where the industrial zone is a physical manifestation and not just an abstraction in the form of a plan. In the four chosen provinces where further interviews were made at the district level, district governments were noticeably more reserved than their provincial counterparts, but nonetheless careful not to be critical. At the ward or commune level, one administrative unit below the district, feelings are just as mixed. It suffices at this level to talk of residents, since the manager of the ward or commune usually is a resident as well. On one hand, the industrial zone and the employment that it could generate symbolises the promise of a more stable livelihood; on the other hand, those who have gone on to secure factory jobs and suffer the pollution because of their near living quarters appear to perceive themselves as victims of environmental injustice. They have no money to move away, and no power to effect change through official channels of complaints.

Thus, the meanings attributed to and vested in the industrial zone as a place clearly change with its spatial parameters. The physical boundaries of the industrial zone and the administrative boundaries, that it lies outside of, contribute to the perception of environmental injustice. This scepticism towards its potential contrasts with the

promise perceived at higher levels of government; the balance between these two positions changes across the level of government. The further the governmental level was removed from implementing and managing the actual place, the greater they perceived promise in the industrial zone. The industrial zone as a place, and the meanings attributed to it, are thus dependent on spatial parameters such as territory and scale. This will be explored in the next chapter.

4. SOCIO-SPATIALITY OF WASTEWATER MANAGEMENT FAILURES IN OTHER INDUSTRIAL ZONES ALONG THE HAU RIVER

This Chapter hence presents further evidence from five other industrial zones in the other three Hau River riparian provinces, in support of the postulated utility of a socio-spatialised analysis of environmental management. After the case study of Tra Noc IZ in Can Tho City, narrated in Chapter 2, six other industrial zones in Can Tho City, An Giang, Hau Giang, and Soc Trang along the Hau River were examined, partly in order to investigate if there were any upstream-downstream dynamics that could affect wastewater management practices. What surfaced was a similar situation of half-completed industrial ones with a mere handful of factories operating in them, with no centralised wastewater treatment plants or wastewater management systems in place. Other observations made in Tra Noc were also repeated. The Vietnamese state administrative system also has a strong framing effect on the operative mindsets of the actors. Be it state agencies, party cadres, or local residents, all involved seem clearly aware of the administrative level that they were in, to the prejudice of effective monitoring and enforcement. The mismatch of the administrative level at which the polluter is managed and the geographical level at which pollution occurs, and ritualistic references to legal regulations that do not clearly delineate the agencies' operational boundaries also facilitate inaction. The symbolism of the industrial zone, which Chapter 3 has introduced in its narration of the policy significance of the zone for the Vietnamese government, appears to aggravate the problem. The provincial governments pursue industrial zones aggressively and the local residents in the largely rural Mekong Delta have associated them with the promise of livelihoods betterment. The interaction of these place-meanings with administrative scales and operational territories[102] is the basis of this Chapter's "socio-spatialised" account of wastewater management in industrial zones along the Hau River.

Given the similarities in the technical parameters of the case studies in the three field sites, in order to avoid repetition and to facilitate comparison, rather than presenting each case individually, the data is presented here according to these empirical categories that call on socio-spatial themes: the symbolic meaning of the industrial zone for the provinces (Section 4.1), the local place meanings of the industrial zone (Section 4.2), the levels of government and shifting operational boundaries as frameworks for (in)action (Section 4.3), and extra-administrative-structure factors and actors (Section 4.4). This presentation also reflects the nature of my data collection and analysis. Complete comparison of the four provinces was not possible because not all interview topics solicited the same interest in my interviewees, and not all desired interview partners granted interviews. Annex 7 ("The seven case studies in four field sites along the Hau river") lists the field sites and their technical parameters, which, despite the different locations and slight variations in technical details, are largely similar in terms of low occupancy rates, infrastructure development, and environmental management. Presenting according to these empirical themes of socio-spatiality, rather than on a case-by-case basis is analogous to how I reconstructed a whole based on pictures of its parts that I was given a glimpse of.

[102] These terms – place meanings, symbolic meaning, governmental levels, level-jumping, boundary-redefinition – connoting or relying on socio-spatial concepts are used as empirical categories in these section headings. It is only after my presentation of the empirical data that I first discuss the socio-spatial theoretical concepts in Section 4.5.

4.1 Symbolic meaning of industrial zones for provinces

The phenomenon of the industrial zone has spread through the Mekong Delta. In Chapter 3.2.1 ("The deployment of the industrial cluster as provincial policy tool"), I presented figures obtained from the delta provincial authorities, which were severely inflated. This section presents other practices of the Hau River provincial authorities that reveal the symbolic meaning they vest in the industrial zone. First, there are the innovative naming practices in Hau Giang that create a new pseudo-industrial zone, and An Giang's renaming of the industrial zone management board to omit mentions of the industrial zone. Both show two different extremes of symbolic meanings. Then, there is the creation of public non-business units to undertake infrastructure development, which reveals the determination of both the central government and local governments to have one industrial zone per province, if not two. Since these non-business units undertake to do what private investors should have done, they give cause for reconsidering legislating for private sector involvement in environmental protection and infrastructure development, as well as "funding" and lack of finances as oft-given reasons for lack of environmental protection measures.

4.1.1 Symbolism revealed by naming practices

An industrial zone is not always called an industrial zone, just as an industrial zone management board is also not always called that. The act of renaming is not neutral, and evinces their policy significance.

The pseudo industrial zone in Hau Giang

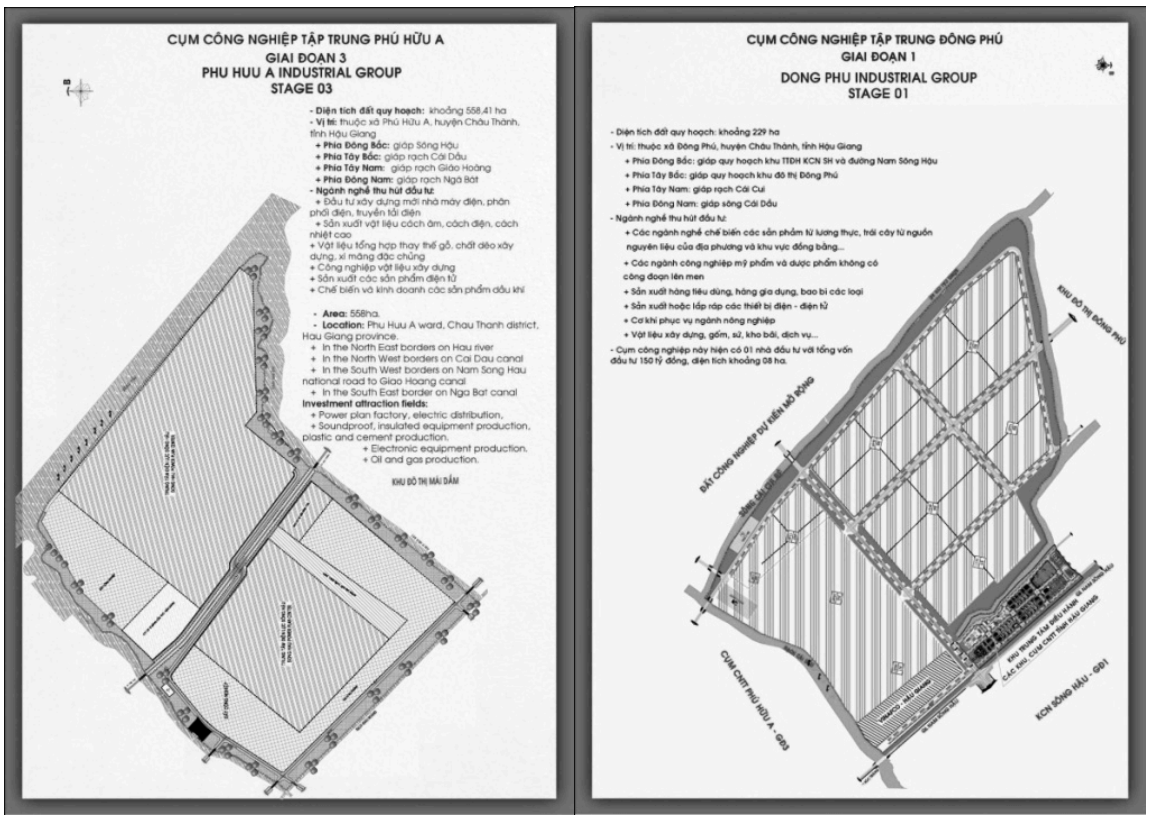
In Hau Giang, I found a third category of "centralised industrial parks", in addition to the industrial zones and industrial parks[103]. These *cum cong nghiep tap trung* were translated in investment brochures as "industrial groups". Since industrial zones are subject to the approval of the Prime Minister, Hau Giang's "centralised industrial parks" are industrial parks that the province wants to convert to industrial zones, but for which they have not yet received the approval of the Prime Minister (*Interview: Hau Giang IZMB, 20.06.11*). Because of this terminological innovation, Hau Giang had to differentiate the normal industrial park (*cum cong nghiep*) by renaming them "small-scale industry industrial parks" *(cum cong nghiep tieu thu cong nghiep)*. This innovation and terminological array – industrial zones, centralised industrial parks, and small-scale industrial parks – is unique to Hau Giang. Because the legislative documents prescribe different management and permissible investment incentive structures in industrial zones and industrial parks, Hau Giang had to innovate by placing the "centralised industrial parks" under the IZMB. By managing industrial parks at the *provincial* level, they inevitably subvert the policy intentions of industrial parks, which is to (a) secure *local* economic development with the district PC in charge and (b) allow for easier environmental management by relocating scattered polluting enterprises in the industrial parks. The Hau Giang IZMB explains that "the same policy applies for centralised industrial parks and for industrial zones, and they are all managed by the management board" (*Interview: Hau Giang IZMB, 22.06.11)*, so these "centralised industrial

[103] Industrial zones (*khu cong nghiep*) and industrial parks (*cum cong nghiep*) differ in size and management. Industrial parks are planned for, established, and managed by district people's committees, while industrial zones are planned for, established, managed by specially established industrial zone management boards.

parks" are only nominally similar to industrial parks, and were not intended to fulfil the policy functions of industrial parks.

Hau Giang's aggressive pursuit of industrial zones might be understood with reference to its new administrative status, and its prioritisation of large-scale projects. Until 2004, Hau Giang was actually part of Can Tho[104]. With the erection of its new provincial boundaries, Hau Giang also received funds from the central government for the set-up of the provincial administrative apparatus. The new status as province *with* socio-economic difficulties was a source of fresh funds, since localities with socio-economic difficulties could use central government budget funds to construct technical infrastructure in their industrial zones, with a maximum of two zones being financed (Decision 43/2009/QD-TTg[105]). Hau Giang has been reported to be amongst the provinces with the largest public expenditures in Vietnam: despite having received only VND 1.6 trillion, they used VND 2.5 trillion, mostly for infrastructure projects (Tuoi Tre, 05.06.11). But there are two official industrial zones, and five "centralised industrial parks"; the latter are not eligible for central budget funding, and are probably better explained by the perception of "larger being better".

Figure 20: The centralised industrial park introduced by the Hau Giang provincial government in its investment brochures



Source: Hau Giang investment brochure. Phu Huu A and Dong Phu are named "*cum cong nghiep tap trung*" (centralised industrial parks), because they are bigger than the regular "*cum cong nghiep*" (industrial parks) but do not qualify for the label

[104] After the split, Can Tho became Can Tho City with its new and now – per definition – urban population density, and a number of decrees were passed to adjust, or rather, set the administrative boundaries of communes and districts in Hau Giang. See for instance, Decree 06/2004/ND-CP of the government dated 02.01.2004 adjusting the administrative boundaries of a number of communes of Chau Thanh and Chau Thanh A rural districts, Hau Giang province.

[105] Decision 43/2009/QD-TTg of the Prime Minister dated 19.03.2009 provides for national capital budget support for the construction of technical infrastructure in industrial zones in localities with socio-economic difficulties. These are defined as provinces with an industrial share in the total economic output of less than 10%.

"*khu cong nghiep*" (industrial zones) since they were not approved by the Prime Minister. Neither of these centralised industrial parks actually exists.

The prioritisation of large-scale projects seems to be based on productivity considerations. The Hau Giang DPI perceived investment as the key out of poverty: "because we are poor, we have to attract investment." (*Interview: Hau Giang DPI, 21.06.11*) Even though the majority of the enterprises in Hau Giang are small-scale enterprises, the Hau Giang DoIT, management entity of smaller-scaled enterprises and entity with supervisory overview of industrial parks, downplayed the significance of super small enterprises and industrial parks and their contribution to the local economy. Instead, it considered large-scale industry to be more important and determinant of the success of the economy (*Interview: Hau Giang DoIT, 21.06.11*). There is an element of management productivity here: investment in the province is generally low and spatially-concentrated in the industrial zones, and "we can't manage super small industry as well as large-scale industry" (*Interview: Hau Giang DoIT, 21.06.11*). The province has demonstrated a preference for large investments: Hau Giang hosts Vietnam's largest paper plant, Lee & Man, with an output of 330,000 tonnes, and the Mekong Delta's largest seafood-processing plant, Minh Phu, with an output of 20,000 tonnes of seafood per annum (Thanh Nien News, 18.08.09), despite being the youngest province. Moreover, the paper plant operator Lee & Man was granted an investment certificate, even though it had failed to even submit an EIA (VietNam Net Bridge, 14.09.07), and negative impacts on the aquaculture and the associated livelihoods in the Mekong River Delta were foreseeable (VietNam Net Bridge, 13.09.07), The prioritisation of economic promise over socio-ecological impacts emphasises Hau Giang's perception of socio-economic growth and the central role of large investment projects.

Thus, the "centralised industrial park" is only another example of the province's preference for, and focus on, large-scale projects. The attempt to elevate the industrial park to the status of an industrial zone, through policy innovations not approbated by the central government, succeeds through the act of renaming. Renaming serves to distinguish these "centralised industrial park" from the normal, usual industrial parks, and help the former achieve the policy significance of the industrial zone. In this sense, the act of renaming demonstrates the place-meanings and symbolism that Hau Giang province associates with the industrial zone.

The unmentioned industrial zone in An Giang

Another example of how a name reveals place and symbolical meaning is that of the An Giang Economic Zone Management Board. It was established in 2007 (Decision 1474/QD-TTg dated 07.11.2007) as the management entity of the border-gate economic zones, but in 2010, the provincial authorities merged the IZ management board and border-gate economic zones management board (Decision 10/2010/QD-UBND of An Giang PPC dated 12.03.2010). Although the An Giang Economic Zone Management Board thus now manages industrial zones, economic zones, and border-gate economic zones, this is not obvious from its name that only mentions economic zones. This merging of existing boards for different types of zones is not singular: it also happened in Ho Chi Minh City. But the Ho Chi Minh City Export Processing Zone Authority, established in 1992, renamed itself the

Ho Chi Minh City Export Processing *and Industrial Zones* Authority in 1996[106]. Hence, I argue that the omission during the renaming in An Giang is more than a mere oversight.

Figure 21: A policy preference for economic zones than industrial zones in An Giang province

Source: angiang.gov.vn (last accessed Nov 2013) The province's advertisement for investment only lists its economic zones (see bold arrow), neglecting to mention its industrial zones that are also seeking investors.

The omission of the industrial zone is the corollary of the policy emphasis on the economic zone. The "leaders" – as they so introduced themselves – of the AGEZMB preferred to talk about the economic zones and it required persistent probes to redirect the interview towards IZs, which they referred to as "centralised zones" *(Interview: An Giang IZMB, 14.07.11)*. As seen in Figure 21 ("A policy preference for economic zones than industrial zones in An Giang province"), the An Giang provincial website[107] also lists only economic zones and no industrial zones in its page on "potential and opportunities". This prioritisation also has physical manifestations: the management board is absent from the site of the industrial zone, whereas in Hau Giang and Soc Trang, the management boards are located in an industrial zone. Perhaps the significance attributed to economic zones by An Giang province is a reflection of national policy: economic zones are the newest industrial cluster[108]. In an interview with the VCCI regarding the development of the border-gate economic zone, the chairman of the An Giang PPC commented, "The economic zone was approved for formation and development two years ago but the Government has taken no action in supporting the provinces. I suggest that the Government should soon issue policies for this focal economic zone… *without this* An Giang province and the Mekong Delta in general find it very difficult to complete development planning and orientation." (VCCI News, 24.08.11)

Another perspective on the omission of the IZ in the name of its management entity is the redirection of the An Giang Economic Zone Management Board's efforts or operational priorities. The IZs in An Giang have failed to attract investors despite having infrastructure, constructed using the funds from the central budget. The economic

[106]The development history of the Ho Chi Minh City Export Processing and Industrial Zone Authority can be found at http://www.hepza.hochiminhcity.gov.vn (last accessed Jul 2014)
[107] See An Giang Province's Portal. http://www.angiang.gov.vn. Last accessed Nov 2013
[108] See Chapter 3.1.2

zones present themselves as another chance to attract the investors that did not come the first time. The management board's characterisation of IZs as "centralised zones" because it is small and fenced as compared to the economic zone which is unfenced and huge as a district or commune (*Interview: AG IZMB, 14.07.11*) also points to the grandeur and possibilities associated with the economic zone. Thus, the omission in the renaming might be interpreted as the lesser policy significance of the omitted IZ, and the diminished place meanings of symbol of progress or chance of improved livelihoods that were once associated with it.

4.1.2 The irony of public non-business units: the state playing investor

None of the IZs surveyed had a private infrastructure developer[109] as required by the legal regulation on management of IZs. "Public non-business units with revenue sources" (*don vi su nghiep*) ("PUBU") were set up under the IZMBs to assume the role of the otherwise private infrastructure developer. The true nature of a PUBU is elusive. In each of the provinces, the PUBU took on a different form and had a different degree of independence in its operations from the IZMBs.

According to the Hau Giang IZMB, the Hau Giang Industrial Zones Infrastructure Development Company was initially established in 2006 by the provincial PC, and placed under the DoIT, but transferred to the IZMB a year later. They characterised the IDC as the investor in the IZs, which used the provincial state budget for the investment, but had no revenue sources. Despite this description that suggests that the IDC is a different and independent entity, "the IDC is directly under the IZMB…If you do something in the IZMB, you might end up doing it in the IDC." (*Interview: Hau Giang IZMB, 08.11.11*) The co-mingling of the two organisations extends to its staffing. The vice-director of the IZMB is also the director of the IDC, one employee of the IDC's land clearance division also holds a concurrent position in the IZMB's technology and planning division, and the IDC in general shares many employees with the IZMB's industrial zone infrastructure construction project management board. Such an arrangement apparently helps to ease the manpower crunch in the management, because the PC did not allocate enough staff (*Interview: Hau Giang IZMB, 08.11.11*). The Hau Giang IZMB considers the absence of a legally-independent, separate and private infrastructure developer to be an advantage, because potential investors would only need to deal with one instead of two entities. Also, the infrastructure developers in Can Tho borrow money from the government and thus have to charge higher leasing rates, than in Hau Giang, in order to pay off the interest on their loans (*Interview: Hau Giang IZMB, 20.06.11*).

In An Giang, the lines between the IDC and the management board are even more blurred. Initially, the management board said there was no infrastructure developer, because state capital had been used to construct the two IZs in An Giang, and so investors in the IZs pay the management board land-leasing fees and fees for use of infrastructure. But, it then explained that there was a public non-business unit with revenue that used the state capital, and that "this state-owned enterprise is now a joint stock enterprise". (*Interview: An Giang EZMB, 14.07.11*) Two things are notable. First, the terms "state-owned enterprise" and "public non-business unit that uses capital from the state" were used interchangeably, when they are not the same legal personalities. Second, the investors in

[109] In Chapter 2, which introduced the case of Tra Noc IZ, it was mentioned that the infrastructure developer, CIPCO, was set up by the Can Tho City provincial authorities, and then later converted to a joint stock company. It is likely that it was a public non-business unit with revenue sources.

the IZs had registered with the management board, instead of this non-business unit/state-owned enterprise/joint stock company, but the revenue from the infrastructure went directly to the state agency instead of the technically-legally independent non-business unit. The rationale appeared to be that the non-business unit did not count as an infrastructure developer, because it was not private, but state-financed.

In Soc Trang, the PPC established the public non-business unit in 2003, and it is partially funded by the Soc Trang provincial budget. This PUBU is the only one that has managed to construct a centralized wastewater treatment plant. Although they are paid by the IZ enterprises for treating the wastewater, there is no profit margin, because it is not a business (*Interview: An Nghiep IDC, 01.11.11*). They also receive leasing fees paid by the enterprises operating within the IZ to cover their tax payments and operations (*Interview: IDC of An Nghiep IZ, Soc Trang, 01.11.11*). While its physical location within the IZMB building might suggest that it is a part of the IZMB, as in the other provinces, its operations suggest that they conform to the concept of legally-independent entities.

It can be deduced that a non-business unit with revenue sources is thus a publicly-funded pseudo-business set up by the province for undertaking business that should have been taken up by a private actor/investor. And so, it is run by officials and bureaucrats of the public administrative system; in this case, persons working in the IZMBs. But the extent of independence of the non-business unit from the state agency running it depends on the state agency itself. In An Giang and Hau Giang it was considered only a part of the IZMB, while in Soc Trang, it had independent less-profit-oriented business activities and services. Thus, essentially, though not technically, the IZMB is the infrastructure developer: and the state, rather than a private investor, is the funding body. The phenomenon of the PUBU for infrastructure development in the Mekong Delta is ironic, since the purpose of the IZ is to have private sector money finance the construction of infrastructure that will then attract more investors. Instead, the delta provinces had to spend the money that they had hoped to earn. Certainly, the practice of PUBU establishment illustrates the symbolic meaning vested in the IZ, which leads the delta provincial authorities to pursue them regardless of twisted logic and costs.

The need to reconsider funding issues and private sector involvement in environmental protection

The PUBU phenomenon has repercussions for legislating for private sector provision of environmental protection services. Soc Trang's centralised WWTP and the ones being built in Hau Giang were also paid for with public funds. But, it is precisely this situation that the regulation intended to avoid: the polluter should pay for cleaning up. Moreover, that the funds for infrastructure development had come from the state has led to a subsequent lack of initiative in the case of An Giang: the management board still hopes to receive funds for constructing the legally-required CWWTPs (*Interview: AGEZMB Environmental Division, 08.12.11*), instead of searching for alternative funding methods as in the case of for instance, Can Tho City. On the other hand, these PUBUs plug the implementation gap that the legal framework creates. Soc Trang's centralised WWTP is up and running, and their operational rationale is food for thought: "The enterprises agreed to pay enough for us to pay for our operations…the centralised WWTP serves the enterprises, it is not a business. Other infrastructure developing companies might include a profit margin in their wastewater treatment fees, but we do not." (*Interview: An Nghiep IDC, 01.11.11*) Where environmental protection infrastructure is missing, as in the Delta and other developing

regions of the world, might the profit margins of the private sector be prejudicing payment for environmental treatment services?

The PUBU also demonstrates a need to reconsider both the formal-informal and the public-private divide. The blurred public-private divide was already pointed out in Chapter 2[110]. Given the failure of industrial zones in the Mekong Delta to take off, the PUBUs are a valid solution and a sort of an officially-approbated informal solution. It serves as an example of how the formal cannot exist without the informal, since formal legal requirements lead to informal innovations to achieve legal conformity. The increasing participation of joint stock enterprises in IZ development (Cheshier 2010) confirms previous observations that there is growing local corporatism in Vietnam, because of lower levels of the state emerging as business elites by establishing IZs contrary to directives (Dixon and Kilgour 2002). This raises legitimate questions about the implementation of regulatory frameworks based on the idea of the public regulating the private, where the public is involved in what are supposed to be private business functions.

Last of all, the PUBU also casts a different light on the oft-given excuse of lack of funds for environmental protection. The existence of PUBUs seems like the strongest argument that the provinces lack investment, financing, and generally, funds. But the state had recognised that provinces with "extremely difficult socio-economic situations" (Decision 43/2009/QD-TTg dated 19.03.2009) would and should receive more funds to aid them in their socio-economic development. As little money as there might be, it is probably more important how the funds are applied. Large landmark projects are highly popular in Vietnam (VietNam Net Bridge, 21.10.11; Vietnam Net Bridge, 18.11.11). In An Giang, a 13.9 billion VND loan given by the World Bank was used to construct a port without project utility. A "once healthy area crowded with houses and fields" is now a "sandbank with no investors" (Mazur et al 2008:14) In Hau Giang, large projects are also preferred to capacity-building measures: its newly set-up DoNRE sends wastewater samples to Can Tho City for analysis because its own centre of measurement had neither funds nor technology (*Interview: Hau Giang DonRE, 21.06.11*), even though it is one of the largest users of the national budget (Tuoi Tre, 05.06.11), with enough to pay for developing IZs and consultancies for drawing up land use plans (*Interview: Chau Thanh District PC in Hau Giang, 16.11.11*). That a centralised WWTP was constructed in An Nghiep IZ in Soc Trang with the same 70 million VND, that Binh Hoa IZ in An Giang or Song Hau IZ in Hau Giang also received, points to management than absence of funds as the culprit.

The financing issue appears to be a smokescreen for a variety of attitudes prejudicial for environmental protection. For provincial authorities, there is the old idea that environmental protection is a luxury, and that wealth is a precondition:

> "There is no or little investment in environmental protection or technology because Soc Trang is still poor and there is awareness but no capital to invest in protection. The interest rates are too prohibitive." (*Interview: Soc Trang DPI, 28.06.11*)

[110] See Section 2.3.1

There is also the perception that environmental regulation is investor-unfriendly. Although sanctions from inspections are destined for the provincial environmental protection fund,

> "An Giang deals with companies differently because there are only 17 large enterprises and the province's industrial growth depends on them. So instead of fining them, more creative methods have to be applied." (*Personal communication: Director of An Giang EPA, 07.12.11*)

This attitude pervades the provincial apparatuses. In Soc Trang, even the water supply company was not free from the (provincial governmental) pressure to provide such investment incentives, until the situation was no longer self-sustaining:

> "Initially, the factories in the IZ paid 3800 VND/m3 and those outside paid 5100 VND/m3, but this has finally been adjusted this year. The water tariffs were a kind of *investment incentive policy*, because they wanted to *encourage investors*. This policy is for when the factories are established, but later the balance must be re-established…The industrial zone *management board was not positive*, but we had the decision of the PC behind us…" (*emphasis mine*) (*Interview: Soc Trang water supply company, 02.11.11*)

On the side of the polluters, while the unavailability of financing options because of interest rates is often mentioned (*Interview: Ex-head of Can Tho DoST, 28.10.11 / Personal communications: German GIZ consultant, 16.09.11; CIPCO personnel, 22.09.11; AKIZ project coordinator, 25.10.11*), it belies polluter rationality, which is a function of weak enforcement. Non-compliance is cheaper than compliance. Rational polluter behaviour appears to not be about solving the problem, but having something that looks like a solution:

> ST: Why would a company invest, for instance, 10 million VND and still have a problem, when they could pay 20 million VND and have themselves rid of the pollution problem for good?
>
> (Interviewees 1 and 2 turn to look at each other and laughed.)
>
> Interviewee 1 to translator: She thinks this way because she is a foreigner.
>
> (Interviewee 2 nodded in agreement.)
>
> Interviewee 2: Vietnamese companies don't think that way. Because the important thing for them is about *spending the minimal amount of money possible*. The companies would choose the cheaper WWTP just *to save the money*. Using *the WWTP the right way would also lead them to incur more costs* for chemicals to be applied and electricity for the operation. Also, some enterprises do not have information about what to choose and so they end up at a lousy consultancy and simply choose the lowest price. (*emphasis mine*) (*Interview: Soc Trang EPA, 28.06.11*)

These quotations show various attitudes towards the costs of environmental protection, and illustrate how financing or funding issues are the tip of an iceberg of prejudicial attitudes. This substantiates my earlier critique that motivated this contextualised, socio-spatialised analysis; namely, that capacity-legal-financial issues provide a ready diagnosis for environmental management failures, but that digging deeper into social perceptions of their environment (built, natural, and social) provides better understanding.

4.2 Unwavering local place meanings of the industrial zone

Despite the unpromising looks of the IZs in the Mekong Delta, these gated compounds on fertile rice fields represent a certain promise of better lives for the locals who live off the uncertain harvests of the land. In some places, these IZs have failed to deliver on their promises of employment and stabler livelihoods, but outright and vocal discontent was hard to find. I reconcile the contradictions by conceiving the IZ as a place vested with hopes,

whose implementation and management gives it a certain "extra-local" character which insulates it from the local sentiments. The latter is clear when it comes to complaints of pollution from the IZs, but begins earlier with the exclusion of the local authorities, local households, and ecological concerns from the start.

4.2.1 The contradictory and unpromising appearances of the industrial zones

In all four provinces, the appearances of these lauded and touted industrial zones seemed to contradict the amount of place meaning invested in them. In An Giang, land clearance for Binh Long IZ began in 2003 and the three aquatic-product processing plants have been in operation since 2008. But, Binh Long IZ is so small it actually does not meet the definitional requirement of being labelled one: an IZ is, legally, at least 60 hectares large, and Binh Hoa IZ is merely 30 hectares large. Large plots of land stand empty despite the scale of the IZ, and one risked driving past it because it does not even have a gate or proper signposting (see Picture 4: The underwhelming appearance of Binh Long IZ). While Binh Hoa IZ is much larger with more progressed infrastructure development, the 140 hectares of cleared land sit empty, since it has only attracted 3 factories (See Picture 5: The large and empty Binh Hoa IZ). That the two IZs are not fully occupied though the process of land clearance and compensation began in 2002-2003, attests to the lack of success the IZs have had as tools of investment attraction in An Giang.

Picture 4: The underwhelming appearance of Binh Long IZ

There is no gate that marks out the entrance to Binh Long IZ, only a signpost (left) and though the IZ is very small it has large empty plots. (An Giang, Dec 2011)

Picture 5: The large and empty Binh Hoa IZ

While the roads in Binh Hoa IZ are ready, the gate is still being constructed (top left), and most of the cleared land sits empty (bottom right). (An Giang, Dec 2011)

In Hau Giang, huge tracts of land within the 290 hectare-large and 7-year-old Song Hau IZ remain uncleared because of the lack of investor interest, despite the 70 billion VND the province received for the completion of the infrastructure (see Picture 6: Song Hau IZ 7 years after establishment) (*Interview: Hau Giang IZMB, 08.11.11).* Still, it has assumed significance for the local residents who, despite the rate of progress and the fact that only one factory is in operation, see the chances of improved livelihoods in new employment opportunities. Tan Phu Thanh IZ has had slightly more success, although this has also led to obvious environmental management failures (see Picture 7: Tan Phu Thanh IZ 6 years after establishment).

Picture 6: Song Hau IZ 7 years after establishment

Song Hau IZ consists of little other but 2 roads (bottom row) and a sign block at its entrance (top left), and has only one factory in operation. (Hau Giang, Nov 2011)

Picture 7: Tan Phu Thanh IZ 6 years after establishment

Tan Phu Thanh IZ appears to be more developed than the larger and older Song Hau IZ. Signs for offers to drill wells were stuck on some lampposts (top right), and pools of stagnant and foul-looking water stood outside several factories (bottom right). (Hau Giang, Nov 2011)

Picture 8: The gate of An Nghiep IZ as symbolical repetition

KCN An Nghiep looks like any other industrial zone in the Mekong Delta. (Soc Trang, Nov 2011)

Finally, in Soc Trang, An Nghiep IZ looks interchangeable with the other IZs (see Picture 8: The gate of An Nghiep IZ as symbolic repetition). A gate bearing the name marks out the entry point from a highway, and plots for investment flank the central road that bisects the industrial zone. These gates reproduce a sense of engineered industrial planning and uniformity despite their locations. They also stand as evidence, witnesses of a rural province on its way to attaining a higher level of socio-economic development. They could also be seen as guards of provincial ambitions. But their grandness is paradoxical and contrasts sharply with the empty plots of land in which they guard. In this way, the IZs might also said to be symbols of mis-planning and overdrawn expectations. Indeed, the underwhelming appearances of these IZs contrast with the optimism that locals view them with, that continues despite non-delivery on promises of change.

4.2.2 Non-delivery on promised change and continuing support

Residents had high hopes in relation to the IZs. Land compensation fees, resettlement, financial support for the loss of traditional livelihoods due to the resettlement, labour skills training, and employment opportunities in the factories hold a certain promise relative to the hardships of living off the land. Such high hopes can be seen in Hau

Giang, where the lack of clarity about what is actually happening within the bounded fences of the centralised industrial parks or industrial zone, at the district government level and probably generally at the local level, has not diluted the sense of promise.

> "The local people are excited. They are willing to coordinate for the construction of the centralised industrial park. We received the agreement of the local people. (Respondent 2 chips in) When we have the centralised industrial park, the local people will learn and improve their skills, as will the people from the neighbouring areas. The problem of unemployment and excess labour will be solved. The living standards will also improve. Transportation will also improve. (Looking at my translator) Were you born in a rural area? If you were, then you would know that the roads in rural areas are merely dirt paths, and with the centralised industrial park, new roads will be paved, and transportation will improve." (in response to the planned Phu Huu IZ) (*Interview: Hau Giang Chau Thanh District PC, 16.11.11*).

The benefits of the IZ as narrated by the interviewee above are theoretical. In its implementation, there have been difficulties with the land compensation prices offered which were deemed too low (*Interview: Household 1, Dong Phu Commune, 10.11.11*), and the IZ has been largely unsuccessful in attracting investors who will bring the jobs. Despite its long existence on paper, there is only one aquaculture processor in action in Song Hau IZ; local residents actually refer to Song Hau IZ as Minh Phu IZ (*Interviews: Households, Dong Phu Commune, 10.11.11*). Fortunately, Minh Phu's labour demands are so large that they have apparently adjusted the upper age limit during their recruitment drive, from 35 to 40; as a result, local households have multiple household members working for Minh Phu, which raises household income without the need for outward migration towards other provinces (*Interview: Household 2, Dong Phu Commune, 10.11.11*).

Hau Giang continues to expand its industrial dreams and in Mai Dam Commune near the planned Phu Huu IZ, the local residents were as hopeful that the industrial zone would improve their lives.

> ST: "Are there people around here who don't think the IZ is a good idea?"
>
> HH2: "People without knowledge say that. People with knowledge will not say that because they know they get money to move or that they will get work. Out of 100 persons, only 1 person will disagree... All the people in this hamlet agree. The local people expect to work there. I want to work as a security guard in the KCN." (*Interview: Household 2 in Mai Dam Commune, 16.11.11*)

It appears that the jobs generated by Song Hau IZ had influenced the perceptions of households elsewhere towards the IZ planned near them:

> "Thanks to the industrial park, our lives are now stable. The employment question is solved. My children received their salary yesterday. All three of my children work for Minh Phu, and altogether they earn more than 10 million VND a month. They have been working for Minh Phu for 3 months now. Previously they worked in our own orchard. My daughter, she peels shrimps. My son, he transports the shrimps from place to place. When we have an industrial park, the local people go there to work. Old ones, like me, we work on the land." (*Interview: Household 2 in Mai Dam commune, 16.11.11*)

This optimism is an interesting contrast to the situation in An Giang, where the IZs are just as unsuccessful, but the relationship between the AGEZMB and the locals is antagonistic. The existing tension harps back to the time of compensation and resettlement. The rates offered were apparently six times lower than the market rates, and some residents had been so vexed and upset that they chose not to take the little money offered and simply left, while others had actually physically attacked the staff from the EZMB (*Interview: Binh Hung hamlet manager, 08.12.11*). That it took five years before a factory commenced operations left the locals unhappier. The EZMB had promised financial support for the locals, but had delayed this payment till the industrial zone was constructed. "They support

the people for six months, but for that financial support (100,000VND/month/person), the wait was five years." (*Interview: Binh Hung hamlet manager, 08.12.11*) The further following comments of the hamlet manager reveal the extent of the tension:

> "They only came for the compensation phase. They even hired a team for 4 million VND a month to sit in that controlling house they built, but even though there is a house, there is no one in it… The IZMB only comes here when the district people's committee asks them to come. When the households were moved by the district people's committee, there was some confusion about where the borders of the households really are, so the district people's committee asked the EZMB to come down to check their maps and clarify. But *when the EZMB came, the local people hit them because of the anger about the compensation prices. So the EZMB doesn't dare to come*." (*Interview: Binh Hung Hamlet Manager, 08.12.11*)

Local employment had been the promise of the Binh Long IZ, both theoretically and specifically, but it had not happened. The local population did not meet the demands of the factories both in numbers[111] and in skill level. Although the factories had provided training courses, the locals did not attend the free training courses because they would have had to forgo the day wages they could have earned at their regular jobs. Eventually, the aquaculture factories had to bring in workers from other provinces. The absence and keeping away of the management board from Binh Long IZ, the redirection of provincial efforts towards economic zones, the IZ's failure to fulfil its promises of local employment generation, and the animosity between the locals and the management board would suggest that the IZ lacks symbolic meaning for both. And yet, the locals' reaction towards the empty plots of land suggests that they still hold onto a glimmer of hope of employment opportunities:

> "The garment company-Nam Thai Son of the National Defense registered this plot of land, but now it is still empty... Land is for investment, why don't they put it into operation?! Land is for business, they already took the land, why don't they put it into operation, to attract investment and create employment?" (*Interview: Binh Hung Hamlet Manager, 08.12.11*)

These two cases are not opposites that cannot be reconciled. Rather, the variety of responses towards the IZs underscores the hope for improvement that these IZs represent, regardless of success, against the background of prevalent poverty in the Mekong Delta. Ultimately, half of the delta's households earn less than 1USD/person, and the average daily income is 200,000VND/day (2USD/day); price increases of farm inputs have also reduced the financial harvest of bumper crops (VietNam Net Bridge, 02.08.11). The Mekong Delta houses a large rural proletariat living away from home, constantly on the move looking for work, earning low wages and lacking opportunities for education and training (Taylor 2004:252). This might encourage a practical attitude towards the IZ despite their lack of success: a possible job is better than none.

4.2.3 Extra-local places: exclusion of local authorities and ecology

Another thesis I had was that the knowledge or experience of environmental pollution and damage from the IZs would diminish the symbolic meanings attributed to them. There was a variety of responses towards environmental pollution ranging from optimism (*Interview: Household 2 in Mai Dam commune, 16.11.11*), resignation (*Interviews: Household 2 in Binh Hoa Commune, 06.12.11; Household 2 in An Hiep Commune, 03.11.11*), to cynicism (*Interview: Household 1 in Tra Noc Ward, 07.10.11*). I found that the IZ seemed to have been insulated from being tainted by

[111] The hamlet manager estimated the number of employees collectively employed in the three factories to be about 3000, but added the important caveat that the industry and its employment figures are prone to fluctuation. This situation has been repeatedly picked up by the media outlets (VietNam Net Bridge, 26.11.11 "Tra processing factories thirsty for materials, workers scramble for jobs")

its poor environmental performance, and this appears to be due to a combination of exclusion from environmental information and the IZ's extra-local management.

Exclusion from environmental information characterised all of the field sites. None of the households and communal people's committees interviewed were aware of the concept of an EIA, and there was no consultation of the commune or ward People's Committees (Article 4, Decree 21/2008/ND-CP dated 28.02.2008), or information provided to the public after the approval of the EIAs as required by the legislation on EIA (Article 14, Decree 80/2006/ND-CP dated 09.08.2006). None of the public participation and information requirements required by the legislation on environmental protection in IZs (Circular 08/2009/TT-BTNMT dated 15.07.2009) were also fulfilled: there was no publicising of environmental information about the IZs by the IZMBs as bulletins in newspapers, at residential areas, or at the commune level People's Committees (Article 22), and environmental dialogues were not organised by the IZMBs even though there had been letters of complaint and denouncement regarding environmental pollution from the IZs (Article 23). This is perhaps unsurprising since the EIA also appears to be a formal than substantive and procedural requirement:

> "Enterprises must perform the EIAs before they begin construction of the factories… But enterprises don't know when to do the EIA. Sometimes, they begin construction of their factories, without having performed the EIA. So this division has to remind them. But EIAs must be well-prepared. If they are not, it will be harder to manage later on. Environmental management is based on the approved EIAs… Since this industrial zone is asking for investment, the appraisal council doesn't ask too many difficult questions...The enterprise's first document is the EIA report. Since the IZ is calling for investment, we cannot treat them so strictly… Of the 10 projects, all were approved." (*Interview: Soc Trang IZMB Environmental Division, 01.11.11*)

> "The DoNRE must approve EIAs. These EIAs are due only after an investment certificate been granted (by the DPI). It has never happened that DoNRE refused to give its approval to an EIA. They are forced to accept the EIA, because the government asked the enterprises to make the EIAs." (*Interview: An Giang DPI, 14.07.11*)[112]

Insofar, the EIA probably ironically best exemplifies the prioritisation of the economic over the socio-ecological; and it is not unexpected that the public demonstrates an unawareness of their environmental information rights and recourses. This might explain the optimism of one household towards the possibility of environmental pollution from the IZ:

> "Our country is in progress. The government will handle it well. The government will talk to the companies to stop pollution... the country is not like it was in the past. We are not afraid of pollution. There is no pollution at all, because the government implemented thoroughly. The companies are foreign, so they are more developed and they won't let pollution happen." (*Interview: Household 2 in Mai Dam commune, 16.11.11*)

The attitudes of the local states towards environmental planning would not encourage such optimism. Industry's reliance on groundwater abstraction is condoned, and this prejudices the ability to plan for sustainable water supply, or estimate wastewater volumes. In Soc Trang, polluted surface water and salinity intrusion during the dry season means that surface water is expensive to treat, with the result that the industrial producers in An Nghiep IZ use groundwater (*Interview: Soc Trang DoNRE, 04.11.11*). But the unsustainability of groundwater exploitation is becoming apparent and the water supply company has proposed increasing water prices for industrial users and exploiting surface water, despite the problem of low flow during the dry season and possibility of higher pollution

[112] This is an account that the An Giang DoNRE does not agree with, as "(e)ssentially DoNRE is the one that agrees to an enterprise's proposed operation at a location." (*Interview: An Giang DoNRE EPA, 15.07.11*). The disparate accounts show the tension between economic growth and ecological concerns, and the organisational territorial assertions and clashes. It also raises the question of how appropriate IZ management boards are as EIA approving agencies.

loads from upstream users (*Interview: Soc Trang DoNRE, 04.11.11*). In An Giang, there are 17 aquatic product processing plants with 24 factories in An Giang, and they abstract groundwater[113] in volumes of about 500-600m^3/day. The province had apparently knowingly struck a deal with the processors, but as the environmental challenges of unmonitored groundwater abstraction surface, the province now wishes to introduce groundwater use charges, and the local DoNRE plans to restrict these abstraction volumes to 100m^3/day, a volume sufficient for freezing and processing, in order to get them to use surface water (*Personal communication: Director of An Giang EPA, 07.12.11*). Such unmonitored groundwater use hinders water supply planning: in Hau Giang, the sole operating factory in Song Hau IZ reported a water demand that the water supply company believed to be a ten-fold exaggeration[114] because the factory did not have reliable estimates for its own current consumption since it uses groundwater (*Interview: Hau Giang Water Supply Company, 01.11. 11*). The challenge that poor monitoring of groundwater abstraction and the over-abstraction poses for wastewater management is the inability to estimate wastewater volumes based on water volume input.

The lack of integration of water resources planning into land use planning is another problem. In Soc Trang, it has led to the concurrent problems of flooding and wastewater around the IZ:

> "The road before us is higher-lying, the industrial zone is behind us, so when the rain comes, the flood water cannot be discharged into the canal. This whole area is flooded, from where my house is, to 5km down the road. All the orange and pomelo trees in the orchard die. The wastewater affects the people on the other side of the IZ, on this side it is the flooding." (*Interview: Soc Trang An Hiep Hamlet Household 2, 03.11.11*)

Also, these IZs, and many others in the Mekong Delta, share the common denominator of location along a highway, or on a river. Due to the underdeveloped infrastructure in the Mekong Delta (Taylor 2004) – there are merely 2 bridges for 13 provinces and 95% of the roads in the region are not suitable for cars (VietNam Net Bridge, 01.08.11) – transportation routes are prime locations for industrial zones. But, while the location of IZs along the river might make sense from a transportation perspective, it also facilitates illegal discharge of wastewater, allowing factories to take advantage of their position to discharge wastewater directly into the river (MoNRE News, 16.06.11).

To return to the theme of environmental information, the exclusion from environmental information at the local level is merely a function of the lack of environmental planning for sustainability at the local state level. There is a general lack of environmental knowledge, which also affects how environmental pollution is understood, or rather, misunderstood. Environmental pollution is not a concern of itself: wastewater was not perceived as an issue as long as there was clean water supply or if the river water could be used (*Interview: Tra Noc Ward area manager, 10.01.2012; Household 2 in Dong Phu Commune, 10.11.11*). Or, one type of pollution is equated with another type. In Soc Trang and An Giang, I observed households equating smell and noise pollution with water pollution, taking the existence of the former to mean the existence of the latter. (*Interviews: Household 1 in An Hiep Commune, 03.11.11;*

[113] The reliance on groundwater stems from the fear of bacterial contamination from supplied water from surface sources.

[114] According to the Hau Giang water supply company, there are plans to construct a water plant with a supply capacity of 20,000m3/day, which should cover water demand from households in Dong Phu Commune, as well as that from the entire industrial zone. Although Minh Phu reported a water demand of 10,000m3/day, the water supply company expressed skepticism and pointed to the example of a previous private water supply company that had believed the estimates given by the factory and could not run a profitable business as such. The water supply company thus estimated the water demand of Minh Phu to be a mere tenth of what it reported.

Household and hamlet manger in Binh Long Commune, 08.12.11; Household 1 in Binh Hoa Commune, 06.12.11) The interviews showed individual perceptions of pollution to be interesting studies of sensory-cognitive correlates. Hearsay mixes with sensory data to become evidence:

> "Interviewee: We *hear the noise so we know they are discharging wastewater*... Some days I cannot breathe. Some of the people here go to exercise at 4am and they can see the fumes coming out of the chimney...
>
> ST: Have you seen the wastewater being discharged?
>
> Interviewee: When they are working, we can *hear the wastewater* being released into the sewage system…. Wastewater cannot be detected. Sickness from wastewater cannot be detected. Some people are sick but they cannot tell what caused their sickness. I will go away when the zone is fuller." (*Interview: Household 1 in Binh Hoa Commune, 06.12.11*)
>
> "The paddy fields and the rice are all black… it has been one month since they stopped treating wastewater. We don't know what time they discharge wastewater, but around 6 to 8pm, we can *smell* the pollution. During the day there is less pollution and at night there is more." (*Interview: Household 1 in An Hiep Hamlet, 03.11.11*)

Moreover, individual perceptions are prone to prejudice and "priming" through circumstantial evidence. The effect of prejudice is observable in An Giang, where there is a general climate of distrust towards the management board:

> "The industrial zone has no wastewater treatment plant. There are a lot of sewers. The sewer system is connected to the river, therefore the people here get all of the pollution. Didn't you think it didn't make any sense when they said the zone had no sewers? They (the IZMB) wanted to hide the truth. They were afraid you would know the truth."
>
> "When they (the management board) wanted to take the land, they came to talk to us. They have not come back here again since they got the land." (*Interview: Household 1 in Binh Hoa Commune, 06.12.11*)

The exclusion from environmental information acts in combination with the IZ's extra-locality to insulate the IZ from being tainted by knowledge or experience of pollution. Extra-locality characterises the entire existence of an IZ, from its planning, implementation, to management. I first coined this term earlier in Chapter 2 to describe how the Tra Noc IZ was buffered from the local administrative structures at its physical location because it is administered and managed by an agency at a higher governmental level. In Section 3.3, I elaborated this thesis and showed that its introduction, planning and implementation, were also extra-local. Thus "extra-locality" can be understood to be more than just spatial mismatch, in that it is a kind of strategy or meaning-giving act to confer extra policy importance. The exclusion from environmental information in the planning phase, to be discussed here, is another expression of the IZ's (socio-spatial) extra-locality. "Planning" is usually done by consultancies, invariably from the larger cities outside of the Mekong Delta, and commissioned by the IZMB and DPI. The district People's Committee plays no actual part in planning, although they are invited for a nominal "consultation" *(Interview: Hau Giang Chau Thanh District PC, 16.11.11*); it can be expected that the commune or ward people's committees were also not involved in planning. This exclusion from the planning process sets the stage for the relationship between the district PC and the investors within their area of operation.

> "We are forced to have a relationship with the IZMB because the land belongs to the district. This is decentralised administration… Yes, the centralised industrial park is in this commune, but the industrial zone management board is the one that directly manages it." (*Interview: Hau Giang Chau Thanh District PC, 16.11.11*).

This quotation also shows that IZs are "carved out" from its physical location by the administrative structure[115]. There are two main consequences of this extra-locality in the IZ's management. First, the IZMB is buffered from

[115] This was already described in Section 2.3 in the case study of Tra Noc IZ: it is managed at the provincial level, and not by the lower-down district authorities nearer to its site and location

local dissatisfaction since it is hardly physically accessible (*Interview: Household 2 in Binh Hoa Commune, 06.12.11*). Second, the IZMB as a physical entity instead of the IZ as an abstract concept bears the brunt of this discontent. None of the interviewed local households questioned the provincial authorities' plans to establish an IZ despite the lack of private sector interest, seeing it as necessary as part of plans for development (*Interview: Household 1, Binh Hoa Commune, 06.12.11*) and that a local resident can merely follow the plans of the "state" (*Interview: Household 2 in An Hiep Commune, 03.11.11*). Instead, the displeasure of the locals is directed at the IZMB as the "competent agency", for being the one that should have better managed the polluters within the IZ. The IZMB is seen as responsible for the problem, the one who is covering up (*Interview: Household 1 in Binh Hoa Commune, 06.12.11*), and the one who should fix it (*Interviews: Household in Phuoi Thoi Ward, 07.10.11; Household in Binh Long Commune, 08.12.11*).

Summing up this section, the symbolic meaning of the industrial zone for the local households as a certain promise of better lives is not reduced despite the unpromising appearances of the IZs showing little progress in attracting the much desired investors, or their failure to secure employment generation for the locals. Even vocal discontent[116] was tempered by a last bit of optimism that the promise might still come true if the investor finally came. This is easy to understand if the poverty of most households, and the fact that much of the Delta's population is already on the move for jobs, are considered. To deal with the contradiction between the symbolism of the IZ and its actual lack of success as a policy tool, I hypothesised that knowledge or experience of environmental pollution would reduce the standing of the IZ in the eyes of the locals. This whole Section 4.2 deals with this contradiction: I had previously expected the disappointing appearances of large empty plots of land (Section 4.2.1), and failure of the IZs to deliver employment and economic chances (Section 4.2.2) to reduce its place meaning and symbolism. Instead, I found that the IZ's symbolic value remains high, even amongst those who directly suffer from its establishment and failure. I found too that the extra-locality of the IZ saved and preserved the symbolism of the IZ. The locals were excluded from environmental information, which was unsurprising as the local authorities themselves did not practise environmental planning as seen in their neglect of sustainable water supply, EIAs, and integration of hydrology into land use planning. Neither locals nor local ecological concerns factored in the planning, which expresses the extra-locality of the IZ: it is implanted, regardless. This extra-locality also characterises its implementation and management, such that the IZMB, as a physical entity inaccessible for the locals, rather than the abstract concept of the IZ, bears the brunt of local dissatisfaction.

4.3 Levels of government and shifting operational boundaries as frames for (in)action

There are two main mechanisms of monitoring and enforcement with regard to environmental protection in industrial zones: the inspection, and the complaint. The inspection is characterised by the shiftiness of operational

[116] Alternatively, the support I identified might be better differentiated. It has been suggested that village societies teem with everyday forms of support and compliance with government authorities and the prevailing systems. In lieu of outright resistance, it is the extent of intentionality that marks these everyday practices as support or compliance. The former involves deliberate or even enthusiastic endorsement, while compliance is a matter of going through the motions of support without much thought to it (Kerkvliet 2009). Even if the residents might not be actively supporting the policy of the IZ, there is certainly no resistance towards it.

boundaries, resulting from both their legal mandates and the language of these mandates, but also from circumscription of environmental regulators due to the nature of certain subjects of investigation. The complaint mechanism is hindered by a mismatch of the physical location of pollution and the management of the polluter. Through the accounts of both law enforcers and the community members who have brought complaints, it is obvious that the levels in the state administrative structure as well as the operational boundaries of its state agencies frames the operative mindsets of both state agents and community members. These actors all see themselves as located within certain levels, and issues as falling inside or outside of organisational operational boundaries. Yet, there are also instances of "scale-jumping", whereby actors overcome the level where they are supposed to be, in order to get something done. There were also attempts to redefine operational territories.

4.3.1 Shifting operational boundaries

In the case of Can Tho City, the main monitoring and enforcement mechanism for environmental protection in the industrial zone is the inspection (*thanh tra*), which can be scheduled and biannual (*thanh tra theo ke hoach),* or unscheduled (*thanh tra dot xuat*). The latter[117] does not require the inspectors to inform the factories, and is thus only possible if they had been planned for in the inspectorate's annual work plan, or if there had been letters of complaint.

However, the inspection seemed to play a varied and lesser role in the other Hau River provinces. In Soc Trang, IZ enterprises are not involved in inspections. The Soc Trang EPA shared that the inspection team works with the infrastructure developer and not the individual enterprises (*Interview: Soc Trang EPA, 28.06.11*), since the infrastructure developer manages the 1135 m^3/day.night of wastewater in the IZ and runs the only WWTP in the IZ with a capacity of 4000 m^3/day.night (Southwestern Department for Environmental Protection 2010). For the EPA, the work of checking on the enterprises fell on the IZMB: they saw a possibility for checks (*kiem tra*), which are not legally regulated and subject to the strict procedural requirements of the inspection, which the IZMB or environmental police can perform, because the Soc Trang DoNRE only does inspections (*Interview: Soc Trang EPA, 28.06.11*) The Soc Trang DoNRE has also never organised an unscheduled inspection – in this province, the DoNRE inspectorate can organise such an unscheduled inspection, and work without the rest of the usual inspection team, if violations had been detected (*Interview: Soc Trang EPA, 28.06.11*).

In An Giang, both IZs have no CWWTPs. The hamlet manager shared that the DoNRE had never come to the IZ for any inspections, but the MoNRE did once (*Interview: Hamlet manager, Binh Long Commune, 08.12.11*). In Hau Giang, both IZs also have no CWWTPs. The DoNRE was not able to provide consistent information. They had first said that the inspections are annual, but then added that it was "maybe twice annually", and that the team consisted of the DoNRE, a person from an unspecified branch of the DoNRE, the environmental police, and the IZMB. The IZMB environmental division shares that "normally we only check once a year". The Vietnam Environmental Agency conducted inspections in Hau Giang in 2010 and 2011, and concluded that Song Hau IZ has no arising wastewater, since most of the four projects that had been issued investment certificates were

[117] The DoNRE inspectorate had been directed by the PPC to run more unscheduled inspections because the number of letters of complaint had increased. In such a case, the usual team plus the local news agency would also be invited, in order to report on and "name and shame" the polluter, if caught red-handed (*Personal communication: Can Tho DoNRE Inspector, 19.11.11*).

preparing for investment and land clearance (Southwestern Department for Environmental Protection 2011b). In Tan Phu Thanh IZ, the 8 factories in operation had been operating prior to the establishment of the IZ, and had their own EIA reports according to which they conducted environmental management and treatment. (Southwestern Department for Environmental Protection 2011b).

Hence, characterising the inspection as the main monitoring and enforcement mechanism for environmental protection in IZs in the Mekong Delta might appear unjustified considering the lack of evidence that it is actively used. Nonetheless, the provincial state agencies displayed similarities in the way they reacted to the topic of the inspection, regardless of whether or not it is actually carried out, and how. For one, the bureaucrats often referred to the law in explaining the boundaries of their operations, particularly in relation to other state agencies. Inspection also appears to be hampered by unclear boundaries between the public and the private.

The bureaucrats' vocabulary and ritualistic references to law

In interviews, personnel repeatedly refer to "the law":

> "*According to the Law* on Environmental Protection, the large-scale projects are under the Ministry and the An Giang People's Committee authorised the DoNRE to approve environmental impact assessments. *According to the Law* on Environmental Protection, the provincial PC manages projects in the industrial zone… The Economic Zone Management Board *must coordinate* with other departments to avoid overlap...*The Circular* from MoNRE prescribes at least 4 checks a year..." (*emphasis mine)* (*Interview: AG EZMB Environmental Division, 08.12.11*)

The formulation of the national legal regulations was also retained: "assumes primary responsibility", "coordinate with other departments", "implementation", or "competent agency" were often repeated in provincial regulations as well as in interviews.

> "Projects in the small scale industry industrial parks are obliged to do either EIAs or environmental protection commitments…There is *tight coordination between DoNRE and DoIT*... DoNRE and DoIT have to *cooperate* to check after the EIA have been approved to see if implementation has been carried out… *DoIT coordinates with DoNRE* to approve EIA." (*emphasis mine)* (*Interview: Hau Giang DoIT Environmental Division, 11.11.11*)
>
> "The inspection team comprises DoNRE, environmental police and the local government working in the environmental division. The environmental police and DoNRE take samples and decide the time the enterprise has for making good the situation. DoIT is *just a coordinating department* and DoNRE *assumes primary responsibility*." (*emphasis mine)* (*Interview: Hau Giang DoIT Environmental Division, 11.11.11*)

Despite the references to the law, the law in itself provided limited guideline for action because of the continuous state of change:

> "Vietnamese law is not specific. It is changed continuously." (*Interview: Director of Green Environment Joint Stock Company, 05.12.11*)
>
> "Everything must follow the law…everything must be implemented properly or DoNRE can get sued… Everything is amended continuously. The law is still not complete even though updated and amended…we must still wait for circulars and decrees" (*Personal communication: Can Tho DoNRE inspector, 19.11.11*)

In this sense, the bureaucrats' references to the law and its legislative calls to coordination are an expression and result of the lack of clarity in terms of direction for organisational operations. "Coordination" can be traced to decentralised administration in Vietnam. Decentralisation foresees geographical and thematic dispersal of management activities: the district reports to the province, and the province to the centralised government, while simultaneously, the division reports to the department, which reports to the ministry. There is both a geographical

place-based and thematic competence-based dispersal of duties; but these also overlap, thus the need for "coordination", "main responsibility", and "tight coordination". The law, its requirements for coordination, and the bureaucrats' references to it, appear to confer a veneer of regularity contrary to the confusion about coordination-cooperation. Table 15 ("Legislative actions required to clarify operations and "coordination" relating to the industrial zone in An Giang, Hau Giang, and Soc Trang") shows the legislation passed by the three provinces to deal with the working boundaries and coordination between their IZMB and other provincial organisations. Take the example of Soc Trang: even though the Soc Trang IZMB only has to manage *one* IZ, two pieces of provincial legislation have been passed to define its mandate, and another two to define its cooperation with other provincial organisations. And, ultimately, despite the attempts to clarify cooperation and coordination, in the case of environmental protection in the IZ, there was no coordination involving the IZMB on the ground. The inspectors and the EPA simply worked together with the infrastructure developer of the IZ (*Interview: Soc Trang EPA, 28.06.11*). The practical resolution of the ambiguous legislative "coordination" in Soc Trang suggests that the references to law and coordination is a form of discourse not necessarily reflective of action.

Table 15: Legislative actions required to clarify operations and "coordination" relating to the industrial zone in An Giang, Hau Giang, and Soc Trang

Province	**Legislative actions**
An Giang	Decision 81/2007/QD-UBND of An Giang Provincial People's Committee dated 21.12.2007 on regulations on the operations of the Industrial Zone Management Board Decision 15/2008/QD-UBND of An Giang Provincial People's Committee dated 02.05.2008 on regulations on operations of the An Giang Economic Border-gate Zone Management Board Decision 1944/QD-TTg of the Prime Minister dated 26.11.2009 establishing An Giang Export Processing Zone Management Board Decision 10/2010/QD-UBND of the An Giang People's Committee dated 12.03.2010 on the regulations on functions, duties, authorities and organisational structure of An Giang Economic Zone Management Board Decision 60/2010/QD-UBND of An Giang Provincial People's Committee dated 02.12.2010 on state management coordination of operating sectors in An Giang's economic border-gate zones and industrial zones
Hau Giang	Decision 39/2006/QD-UBND of Hau Giang's Provincial People's Committee dated 31.10.2006 promulgating management regulations of local industrial zones, industrial parks, and small-scale industry industrial parks Decision 40/2008/QD-UBND of Hau Giang's Provincial People's Committee dated 09.09.2008 promulgating management coordination regulations in Hau Giang's industrial zones Decision 38/2009/QD-UBND of Hau Giang's Provincial People's Committee dated 03.11.2009 promulgating management regulations on environmental protection in Hau Giang's industrial zones and centralised industrial parks

Soc Trang	Decision 179/2005/QD-TTg of the Prime Minister dated 15.07.2005 on the establishment of the Industrial Zone Management Board of Soc Trang Decision 26/2009/QD-UBND of Soc Trang Provincial People's Committee dated 18.08.2009 promulgating the Regulation on working coordination between the Park Management of Soc Trang province with the business departments and localities Decision 24/2010/QD-UBND of Soc Trang Provincial People's Committee dated 18.10.2010 on the functions, tasks, powers and organisational structure of the Industrial Zone Management Board in Soc Trang Decision 28/2011/QD-UBND of Soc Trang Provincial People's Committee dated 17.08.2011 promulgating the Regulation on coordination between the IZMB in Soc Trang with the departments, branches, and localities

Instead, these ritualistic references to the law can enable and justify a strong sense of self-circumscription[118] and inaction in face of ambiguity. Such a critical and sceptical view is supported by the fact that there is an alternative to the multi-party coordination drama of inspections detailed in the Law on Environmental Protection: checks, the coordination-free option to inspections.

> "There are no Vietnamese rules or laws regulating *checks*. *Inspections* are complicated and can last up to a month. They can be annual or unscheduled. Annual inspections are announced, and a group comprising representatives from DoNRE, the environmental police, the PC, and the EPA are involved. The DoNRE is the group leader… Only DoNRE can inspect, even the local People's Committee itself has no right to inspect. Besides the IZMB, the environmental police are the other bodies that could *perform checks*." (*Interview: Soc Trang DoNRE, 28.06.11*)

Yet, none of the IZ management boards' environmental divisions spoke of performing checks. The underutilisation of coordination-free checks and reliance on the coordination-heavy inspections is suggestive of the law as a resource for inaction.

The avoidance of this legally-required coordination actually aided the legislative purpose of environmental protection in Soc Trang. The difficulties of coordination, which led to the general failure of inspections in Can Tho City (see Chapter 2), are sidestepped by the, technically non-conforming, wastewater treatment model in Soc Trang. There are no individual wastewater treatment plants, only a CWWTP. Instead of self-monitoring by the factories coupled with enforcement via (bi)annual inspections, the infrastructure developer unit in this IZ monitors the enterprises, in order to determine the fees to charge them, and provides the monthly samples to DoNRE for the determination of the wastewater treatment fees payable, such that the inspectorate of the local DoNRE works with the infrastructure developer instead of inspecting the enterprises. There is no legal enforcement, but there is also more monitoring than in other IZs. The relative success of wastewater treatment in Soc Trang comes down to the relinquishment of organisational territories by DoNRE and STIZMB, such that the infrastructure developer can fill the void and "so the inspector works with the infrastructure company and not the individual enterprises in the industrial zone." (*Interview: Soc Trang EPA, 28.06.11*) This example of how circumvention of legally required coordination aids the legislative purpose of environmental protection thus invites us to reconsider the emphasis on legal conformity.

[118] "The industrial zones fall under the government's planning. The government makes the decision to establish the industrial zones, and DoNRE manages local management of water resources and environment." "The procedure for setting up the industrial zone is sent to the prime minister, and then in the implementation phase, DoNRE comes in where there is implementation for the environment." (*Interview: Soc Trang DoNRE, 04.11.11*)

Unclear public-private divides

The environmental management set-up is based on the effective control of private actors by the public; but, occasionally, the state might also be the company that it is supposed to control. Earlier in Section 6.2, the discussion on PUBUs illustrated how the public and private are not the separate spheres the usual dichotomous pairing suggests. I came across further highly suggestive anecdotal evidence that was difficult to corroborate, which suggested unclear boundaries between public and private prejudiced environmental protection. An inspector from Can Tho City shared that a polluter with connections to the provincial people's committee had escaped sanctioning even though it was caught polluting, because the decision to sanction the polluter must be taken by the chairman of the provincial people's committee (if the sanction sum exceeds 30 million VND) within 30 days of the inspection report being made. The people's committee had stalled for time, promulgating the decision only 45 days after the inspectors filed their report, and so the slaughterhouse found guilty of polluting did not have to pay its fines (*Personal communication: Can Tho DoNRE inspector, 19.11.11*). Another informant shared that an aquaculture factory that had been persistently polluting in Tra Noc IZ was spared the inspection and checks, because of its connection to a prominent Party cadre (*Personal communication: Anonymous, Can Tho*). It is quite feasible that other state-owned enterprises or joint stock companies (the privatised reincarnate of state-owned enterprises) linked with powerful bureaucrats have been spared scrutiny of their performance of environmental protection obligations.

These accounts are by no means singular: the media reported of a state-owned enterprise caught polluting the Dong Nai River, which delayed paying compensation fees, and while there was no outright suggestion that its chairperson, a national assembly representative, had used her political position to delay the process, it could be inferred from the criticism that she was defending her company against pollution charges (Thanh Nien News, 19.08.11). Many scholarly attempts to comprehend the nature of the state-planned privatisation (called "equitisation") of its state-owned enterprises (Fforde 2007; Gainsborough 2009; Painter 2003a, 2003b) would corroborate this account of the blurred boundaries between the public, or state, and the private, or non-state. State authorities are still allowed direct government in privatised companies, and even when it does not have a majority share, the state sells its assets in a manner such that they can exercise indirect government, *i.e.*, the recipients have no choice but to continue reporting to the state (Gainsborough 2009). Managerial discretion is not high because government officials can intervene and impose non-commercial criteria (Painter 2003b). While there have been no studies on the environmental performance of state-owned enterprises or joint-stock companies, it has been noted the economic stability of small producers and state-owned enterprises is a constraint on the efforts of the Vietnamese environmental regulators (DiGregorio et al. 2003:195f).

Hence, the monitoring and enforcement mechanism of inspections in the studied Hau River provinces is characterised by ambiguity in operational boundaries in two senses. First, the state agencies' operational mandates as set out in law does not provide much guidance because it relies heavily on "coordination" and "assuming primary responsibility" to resolve the issue of overlapping operational themes and areas. Additionally, the law is subject to frequent revisions and supplementary guidelines. This nature of the legal documents explains the observed phenomenon of bureaucrats' almost ritualistic references to the law: having something concrete like the law to refer to confers some regularity and basis for their action, but in fact the law and its incomplete directions also allow them to justify non-action. Second, the blur divide between public and private makes it harder to implement

environmental regulations which are based on the notion of the public regulating the private. This is another way in which the environmental regulators' operational boundaries are constrained and unclear.

4.3.2 Mismatch of physical location of pollution and management of polluter

The complaint mechanism

The other monitoring and enforcement mechanism for environmental protection in IZs is the resident's complaint, which has not functioned well. Physically, the pollution and polluter co-exist; administratively, they do not. This mismatch between physical location of pollution and management of polluter is the crux of the matter in understanding why the complaint mechanism has not been effective in wastewater management. Figure 22 ("Physical coexistence separated by administrative boundaries and structures") portrays this conundrum. Complaints are heard by hamlet or area managers, who relay the message to the commune or ward people's committees, which then only relay the serious messages to the district level. The complaint mechanism works bottom-up. But the management board of the IZ "sits" at the provincial level, and can only be reproached at that level.

As a result, the various local households in all the provinces interviewed demonstrated a keen awareness of how limited the effects of their complaints would be given where they were located, and where the IZMBs were seated:

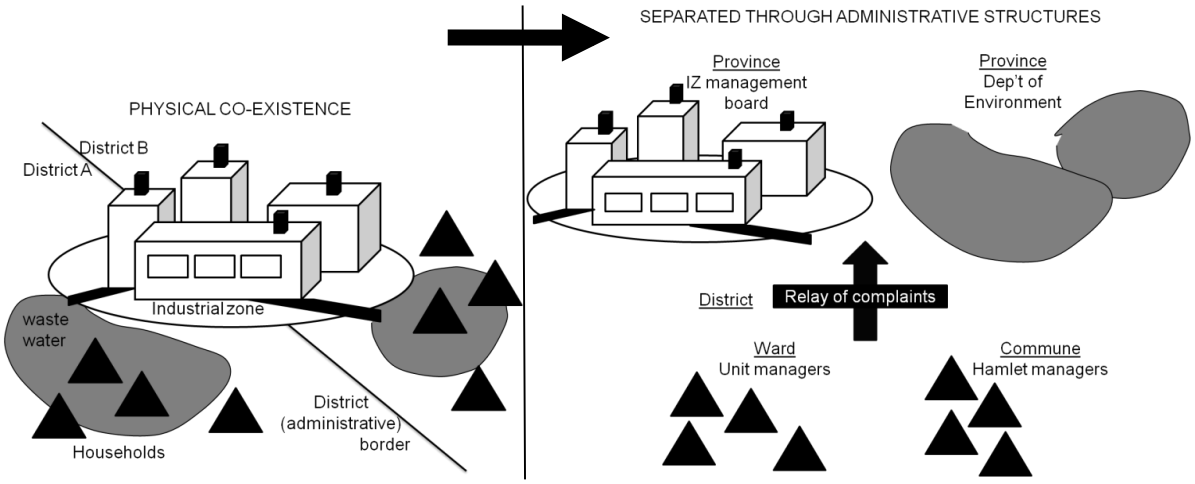
> "The *hamlet cannot solve* this problem. The *commune and the hamlet cannot* do this. Only the environmental division in the province, the *upper levels can* do this. Only the *province* can do this. I have not talked to the district. I have reflected to the hamlet and the commune. The management board rarely comes here, thus it is hard to reflect to them... We are only farmers, how do we make contact with the district level? The organisation that has *authority to talk to the district is the commune*." (*Interview: Household 2 in Binh Hoa Commune, 06.12.11*)

> "… When people provide information about pollution, the *commune doesn't care*, because it is not the function of the commune." (*Interview: Hamlet Manager in Binh Long Commune, 08.12.11*)

> "… The households talk to the commune, *the commune told the province*, and the *province went to check* and said that it is within standards." (*Interview: Binh Long Commune People's Committee Vice-Manager, 08.12.11*)

All accounts show that, for the local household, the administrative level of reference is the commune; even if they are aware that the commune sits below and reports to the district, and that only higher levels of government can do something about the situation. In fact, even the district is too "low" a government level to have any say in the matter of environmental management in IZs. The local households' perception that the closest and lowest hierarchical administrative levels is the only competent agency or authority they have access to is a severe contradiction with the reality of wastewater management in industrial zones. The impacts of wastewater from IZs are felt locally, and not at the provincial level, or by the IZMB sitting in the provincial capital.

Figure 22: Physical coexistence separated by administrative boundaries and structure



The reality of wastewater pollution does not fit the administrative structures which might have worked for monitoring and enforcement.

Moreover, what might be hampering effective complaint-lodging is that the expression of discontent is nuanced. The interviewees differentiate between complaining to the authorities and filing a complaint at the authorities: the verb "reflect" (*phan anh*) was used for the former, and a deliberate choice and attempt to avoid "complain" (*to cao*) and "denounce". This intentional avoidance leads to strange expressions: "my reflection has not been *solved*", or "sometimes a single voice reflecting too much can be *reflected back on*", or "people chat to each other about it but they don't *give any reflections* at all." (*Interview: Household 1 in Binh Hoa Commune, 06.12.11*). The reflection is a verbal and, importantly, informal act of complaining; the complaint is formal, will lead to actions being taken, and has to be written:

> "We reflected by mouth, not by paper. If they continue to discharge exhaust fumes next year, I will sue them…" (*Interview: Household 2 in Binh Hoa Commune, 06.12.11*)

Moreover, it is unclear how the relay mechanism from the local household level to the provincial level actually works. Community-based inspection is seen as a solution for the weak inspection (*Personal communication: Director of An Giang EPA, 07.12.11*), but where are the venues for "reflections", the help for lodging proper denunciations and complaints, and how are these relayed upwards? Hamlet and commune meetings are monthly affairs, but it is unclear if party membership is a prerequisite for joining. In one commune, it was said that party membership is a prerequisite for participation, and retired and working party members alike join the hamlet-level cell meeting, and only the hamlet managers then convene in the commune-level party cell meetings. (*Interview: An Giang Binh Hoa Commune People's Committee, 06.12.11*). But I interviewed households that shared that they had "reflected" at the commune meeting (*Interviews: households near Binh Hoa IZ, 06.12.11*). The significance of this is the accessibility of venues. Because, it seems, reflections rarely grow into proper complaints, because of a lack of information on how to take them further, or for fear of repercussions:

> "People in other areas of Vietnam, they protest, but here, the people don't want to sue. I want to sue, but I never did it before. We discuss about it, but just discuss, no reflection, no suing." (*Interview: Household 1 in An Hiep Hamlet, 03.11.11*)
>
> "If I come up with the petition letter alone, it does not show the collective spirit. When many people work together, there is strength...I don't like to mobilise the others...I just talked in the meetings, I didn't dare to write a petition. *I was afraid of being victimised.*" (*Interview: Household 1 in Binh Hoa Commune, 06.12.11*)

The death of complaints in their infancy as mere reflections reduces the likelihood of successful community-based regulation. What is a "reflection" for a civilian is merely "talk" to the bureaucrat:

> "There are *no reflections about pollution on paper* because the industrial zone is new. (Disappears to ask for information when asked about reflections given at hamlet meetings) The *households talked to the commune*, the commune told the province, and the province went to check..." (*Interview: Binh Long Commune People's Committee Vice-Manager, 08.12.11*)

The formality of the complaint mechanism, the bureaucratic hierarchical attitude towards reflections, in combination with the mismatch of the physical location of pollution and the management of the polluter thus hinder community-based monitoring.

4.3.3 Level-skipping and boundary-redefinition

The monitoring and enforcement institutional set-up for IZ environmental protection is centred on two provincial-level actors, but the legal framework has also designed bypasses. Although the DoNRE (with its inspectorate, environmental protection agency, and centre of measurement) and the IZ management board are the primary actors, the MoNRE Inspectorate can conduct inspections that are additional to the biannual inspections the DoNREs are required to perform. It has an annual list of suspects that it undertakes to inspect and sanction (*Interview: Southwestern Department for Environmental Protection, 16.02.12*). Bypasses of these two central provincial actors also occur spontaneously. Actors at sub-provincial levels have sporadically jumped in to compensate for the inactivity of the IZMB. In An Giang's Binh Long IZ, the hamlet manager lamented the apathy of the commune authorities and IZ management board, and took the situation into his own hands by working directly with the district environmental policeman, who was sent by the district People's Committee to investigate the situation after it received complaints (*Interview: Binh Hung hamlet manager, 08.12.11*). In An Giang's Binh Hoa IZ, a member of the commune People's Committee, after receiving letters of complaint from households that owned paddy fields around the IZ, had invited the DoNRE and gone together with the DoNRE to investigate the matter (*Interview: An Giang Binh Hoa Commune People's Committee, 06.12.11*). In doing so, he had with one step, sprung over the district and provincial People's Committees and the IZMB. This technically contradicts the legal framework: the IZ and all ancillary issues are under the jurisdiction of the IZMB. In other provinces and IZs, the district and commune authorities had lamented, or even relied on, their lack of authority and competence to settle the issue.

"Level-skipping" was a way for actors to circumvent the seeming rigidity of the administrative hierarchy. Within the seemingly fixed hierarchy of administrative levels of central government, region, province, district or commune, and area or hamlet, "levelling up" to the MoNRE and "levelling down" to the commune or hamlet occur. The former happens by design, but the latter is facilitated by redefinition of operational territories, and also physical proximity. The two examples provided in the paragraph above were only possible because there had been state agents who were physically present, able and took initiatives.

Monitoring and enforcement for IZ environmental protection also critically turns on the resolution of operational boundaries and territories between the IZMB and the DoNRE. As shown in Chapter 2 with the example of Tra Noc IZ, environmental protection in the IZ is the overlap in the operational mandates of the IZMB and the DoNRE, with the former responsible for IZs and the latter, for environmental protection. In An Nghiep IZ, I found that the IZ doesn't make it onto the Soc Trang DoNRE's priority agenda, which is focused on combating

the spatially-dispersed pollution outside the IZ (*Interview: Soc Trang DoNRE, 28.06.11*). In that sense, the DoNRE had left the IZ to the IZMB. The Soc Trang IZMB itself has the right to perform unscheduled checks, but its understaffed environmental division believes that the enterprises are cooperative and collaborative (*Interview: Soc Trang IZMB Environmental Division, 01.11.11*). With no state agency asserting its mandated responsibility, the infrastructure developer filled the void. Of all the entities, it had the closest working relations to the potential polluters (*Interview: An Nghiep IZ Infrastructure developer, 01.11.11*). The example of An Nghiep IZ thus points to the salience of operational territories, by showing the effects of the lack of contestation. In contrast, the EIA in An Giang is an example of such a contested operational territory:

> "It has never happened that DoNRE refused an EIA. They are forced to accept the EIA. Because the government asked the enterprises to make the EIAs. If the DoNRE does not like the EIA, DoNRE will be treated according to the compensation law of Vietnam." (*Interview: An Giang DPI, 14.07.11*)
>
> "The guys in the DPI might give wrong information because the DoNRE assesses the EIA before the enterprise starts operation, and assessing the EIA means whether the DoNRE agrees to letting the enterprise operate in that location. When DoNRE agrees, and then revokes the certificate, then we have to compensate, but this has never happened." (*Interview: An Giang DoNRE, 15.07.11*)

It is not only organisational operational boundaries that shift; physical administrative boundaries shift too. In Hau Giang, the effects of a new administrative scale on environmental protection can be observed. As the former district of Can Tho was declared an individual province, fresh funds from the state budget flowed in, and the new province embarked to prune its image by investing in its new status symbols – industrial zones. The environmental protection institutional apparatus in Hau Giang remains under-developed from under-investment; the province continues to rely on Can Tho City for the performance of its environmental protection obligations. Another adverse effect of the new administrative scale on the environmental protection agenda in Hau Giang is the relative inefficiency of the sub-provincial administrative scales and structures. The new "province" status has led to the need to define the sub-provincial administrative scales of districts and communes, areas and hamlets. The borders between districts and between communes are thus redrawn frequently. Interviews with district and commune authorities in Hau Giang revealed that administrative boundaries shift regularly, that there is uncertainty about where the borders between communes are, but that the apportionment of land for industrial purposes is retained, if not expanded (*Interviews: Chau Thanh District PC, 16.11.11; Mai Dam Commune PC, 16.11.11*). Song Hau IZ is now a composite of allocated industrial land in various communes. The case of Mai Dam Commune, where Phu Huu "centralized industrial park" is to be established, is telling: before 2001, Phu Huu Commune (then part of Can Tho) included the upper half of Mai Dam Commune above the canal. In 2001, Phu Huu Commune was carved up into Phu Huu Commune and Phu Huu A Commune. In 2010, some years after Hau Giang was made a province, Phu Huu Commune was reclassified as a "type V urban area", became a town and Phu Huu A's name reverted to Mai Dam (*Interview: Chau Thanh District PC, 16.11.11*).

This redrawing of administrative boundaries is significant, because it could hamper environmental protection by (further) weakening place-based (as opposed to competence-based) monitoring and enforcement structures. Rather than relying on the DoNRE or the environmental divisions in the IZMB and DoIT to perform monitoring and enforcement duties, district or communal People's Committees could have been alternatives the local residents could have reported to. Hau Giang was the only province in which no place-based monitoring, or rather,

complaints occurred; granted, this might be due to the fact that they have only attracted one investor[119]. But it is conceivable that the frequent redrawing of the administrative boundaries and working spatial territories reduces the efficacy of place-based monitoring activities, and would explain the weak inter-organisational coordination observed.

4.3.4 Administrative structures as frames for acting

The local households in Section 4.3.2 demonstrated a clear awareness of the state administrative system and its hierarchy, in the way their accounts in the interviews were often peppered with "the hamlet", "the commune", "the district", and "the province" (*all italicised emphases in quotations mine*):

> "The hamlet cannot solve this problem. The *commune and the hamlet cannot* do this. Only the environmental division in the province, the *upper levels can* do this. *Only the province can* do this. I have not talked to the district. I have reflected to the hamlet and the commune. The management board rarely comes here, thus it is hard to reflect to them... *We are only farmers,* how do we make contact with the district level? The *organisation that has authority to talk to the district is the commune.*" (*Interview: Household 2 in Binh Hoa Commune, 06.12.11*)

> "The people reflected in the meetings with voters with the *representatives of the People's Council*, with *hamlets*, *communes*, *localities*, but nobody solved the problem…The commune did have meetings … but it was not within the commune's authority. The industrial zone is managed by the *province*. The management board was not scared of me, they ignored me." (*Interview: Household 1 in Binh Hoa Commune ,06.12.11*)

> "If I talk to the people's committee, *they can talk to the industrial zone management board*. Because if I go to the management board myself, they won't listen." (*Interview: Household 2 in An Hiep Hamlet, 03.11.11*)

While elsewhere in Vietnam there have been communities that were able to advance their interests despite the administrative structures (O' Rourke 2002), these observations around the IZs in four Mekong Delta provinces found the administrative structure to be dominant. The local households were keenly aware of their low status within the state hierarchy, as shown in their often expressed belief that a higher-up state agency such as the IZMB would not bother with a mere person. Their representative too stuck to the hierarchy in relaying complaints. The framing effect of this administrative hierarchy provides a preliminary explanation for why popular protests in relation to environmental pollution happened elsewhere in Vietnam, but have not been recorded in the Mekong Delta and, specifically, the provinces studied. But this is merely a partial and temporary answer, since there must be other factors at play which increase the framing and socio-spatial effects of the administrative hierarchy in these provinces, compared to the other regions.

The horizontal counterpart of the state administrative system is organisational operational boundaries; the nature of "coordination" required of the state agencies, presented in Section 4.3.1, also showed how the administrative system structured the actions and inactions of state agents (*all italicised emphases in quotations mine*):

> "The environmental police is more efficient…they *assume ground responsibility* if they organise inspections and when they assume ground responsibility, they invite DoNRE, and when DoNRE *assumes ground responsibility*, we invite Environmental Police. There is a joint circular between MoNRE and Ministry of Public Security on *coordination*." (*Personal communication: Can Tho DoNRE Inspector, 16.11.11*)

> "The DoIT does not manage the industrial parks. DoIT only does *administrative management*...whether the size and location of the IP coincides with what was planned...the details about the environment the DoNRE knows, the details about the taxes the Department of Tax knows…the provincial people's committee is the one that *coordinates*." (*Interview: An Giang DoIT, Division for industrial parks, 07.12.11*)

[119] Tan Phu Thanh IZ (also in Hau Giang) was more successful, but I was denied permission to work there, and thus do not know if there were reflections or complaints from the local households.

> "DoNRE manages enterprises inside and outside the IZs so the EZMB is not the only manager. The EZMB must *coordinate* with other departments to avoid overlap." (*Interview: An Giang EZMB environmental division, 08.12.11*)

> "The IZMB manages the IZs, so the *inspector must work with the infrastructure investor* to figure out what the water quality is. The infrastructure company manages the quality of water so the inspector works with the infrastructure company and not the individual enterprises. Outside the IZ, the inspector can check the quality of wastewater of individual enterprises without having to refer to or work with any other body." (*Interview: Soc Trang DoNRE, 28.06.11)*

The instances of level-skipping and operational boundary redefinition in the previous Section 4.3.3 do not so much refute than confirm the framing effect of these governmental levels and operational boundaries in the administrative system. "Levelling up" involves perceiving the government level and hierarchy as a barrier, and skipping a level as the solution. The same applies for "levelling down", which also recognises the hierarchy and even the physical distance between the top and the bottom of the hierarchy: "(We need) community-based inspection. Especially since the inspectorate is weak, we should tap into the district and commune level." (*Personal communication: Director of An Giang EPA, 07.12.11*). The renegotiation or redefinition of operational boundaries too can be understood as a consequence of its poor and ambiguous definition. DiGregorio observed of MoNRE's predecessor, the MOSTE, that its work was constrained by ambiguous operational boundaries, which he refers to as "conditions":

> "These conditions include economic stability (particularly with respect to small producers and SOEs), ambiguity in the regulations, and conflicts between MOSTE and specific guidelines issued by ministries relating to their own production activities. Conditionality of this sort breeds red tape, ineffective enforcement, and corruption. *At the same time, conditionality provides an opening for local consensus-building and regulatory adjustments*." (*emphasis mine*)(DiGregorio et al 2003:195f)

This was in fact the case in An Nghiep IZ in Soc Trang, where the legally-mandated situation was adjusted to the local setting. And yet, the other provinces did not perceive such an opening for adjustment. The sub-provincial and local dynamics of environmental protection is an open question and indeed a much under-researched area in Vietnam studies, which abounds with detailed analyses of how various social groups were able to protect their interests and effect change contrary to plans of the central socialist government.

This section has shown how the levels and operational boundaries within the state administrative system have functioned as frames for acting for the local households, their representatives, and the provincial departments responsible for environmental protection in industrial zones. References to the law and its language of coordination, an expression of ambiguous operating territories, turned out to be a resource for bureaucrats in justifying their actions and inactions. Skipping state administrative system levels was the strategy for certain area and hamlet managers who had wanted to follow through on the complaints of the local households about pollution. These socio-spatial strategies confirm the framing effect of the state administrative system.

4.4 Extra-structure actors

There were also actors who influenced wastewater management practices despite being external to the usual monitoring and enforcement mechanisms. The environmental police are arguably part of the state mechanisms, since they are invited for the inspections; but they differ from the other members of an inspection team in that they are not bound to any governmental level or by organisational boundaries in the state administrative system.

The media influences wastewater management in that it shapes the perceptions of the local households, and functions as an alternative complaint mechanism not bound to the hierarchy of the state administrative system. The real non-state-prescribed alternatives have presented themselves in the forms of extra-structure actors like capacity-building programmes run by international organisations, and research-profit programmes. While these actors appear to hold much promise for securing better wastewater management and environmental protection, by virtue of their being external to the spaces and scales of the state administrative system, this was not supported by my findings.

4.4.1 Environmental police as unbound agents

The environmental police, just as the issue of environmental protection generally, are a relatively new introduction in Vietnam. The Law on Environmental Protection, which provided the legal basis for the environmental police force (Article 52), was first introduced in 2005. As they are essentially a specialist unit within the police force, it was not possible to obtain interviews or information about their modus operandi. Mentions in the media did not reveal much more than the outcomes of their investigations. No scholarly works have been found either.

As such, it is difficult to ascertain the relation of the environmental police to the state administrative system and its socio-spatial framing effects with regard to environmental protection in IZs. Of the studied provinces, the environmental police was only actively involved in Can Tho and An Giang. In Can Tho, the environmental police worked in a team, on their own, and covertly, employing surveillance methods (*Personal communication: Can Tho inspector, 19.11.11).* In Binh Long IZ, a solo environmental policeman had been assigned to work with the hamlet manager. Together, they had gone at irregular hours to investigate the suspected polluters. Although the sleuthing done by the hamlet manager together with the solo environmental policeman revealed nothing of significance, this instance shows how the environmental police could aid community-based regulation by going beyond its traditionally covet actions confined to itself. The hamlet manager had described him as having been sent by the district authorities, and hence referred to him as the *district* environmental policeman. (*Interview, 08.12.11*) But the director of the An Giang Environmental Protection Agency had also lamented that "there should also be police at the district, not just police at the province" (*Personal communication, 07.12.11*). The disagreement between the accounts goes to which governmental level within the administrative structure the environmental police sit at, but both descriptions suggest that state administrative actors perceive the environmental police as part of the same administrative hierarchy, and that the environmental police are more empowered, because they are "higher" up.

To the extent that the environmental police can conduct its own covert checks without having to form a team with any other state agency involved in environmental protection, they are unbound state agents. The environmental police is allowed a greater array of checking methods, such as arranging for "infiltrators to inquire into criminal activities related to the environment", inspecting "residences, workplaces, vehicles and other locations used by persons showing signs of committing environmental crimes" (Article 6, Decree 72/2010/ND-CP of the Government dated 08.07.2010). It is also allowed to seize assets and hold violators in custody (Article 6 of Decree 72/2010/ND-CP); these are measures not available to the inspectorate. The Ministry of Public Security is moving a new piece of legislation on environmental policing, to be passed before the end of 2013, that would allow them to issue fines of up to VND 2 billion (95,2000 USD) for environmental protection violations (VietNam Net Bridge,

04.08.12), instead of the previous amount of VND 500 million (25,000USD) (VietNam Net Bridge, 20.02.10). For that reason, an inspector perceived them to be more effective in their investigative actions (*Personal communication: Can Tho DoNRE inspector, 19.11.11*).

On the other hand, the limits to the environmental police's freedom to act are rooted in their supplementary character to the inspection institutional set-up. As mentioned earlier[120], their checks are not a basis for them to prosecute the polluter with administrative sanctions, and the inspectorate has to take over the resolution of the case (*Personal communication: An Giang EPA Director, 07.12.11*). The deputy head of the Environmental Crime Prevention Department of the Ministry of Public Security shared that although the environmental police uncovered about five to six thousand violations a year, only a few firms are prosecuted, because evidence is hard to compile since there are no regulations compelling companies to cooperate, and the criminal code does not define what "pollution" in an environmental crime is (Viet Nam News, 08.10.11) or what "serious", "very serious" or "extremely serious" violations are (VietNam Net Bridge, 02.11.11). Moreover, the lack of post-inspection follow-up – to see if companies have implemented and are complying with environmental protection laws (Tinmoitruong, 28.11.11) – minimises the efficacy of their environmental protection work. Hence, the extra-system character of the environmental police force, its lack of integration into the inspection set-up, which was its strength, is also its disadvantage.

4.4.2 The media's potential for flattening the hierarchy of information flow

The media's involvement in covering instances of environmental pollution has the effect of flattening the state administrative system's hierarchy. The term "hierarchy" has various usages and ought to be defined. At the very least, all definitions connote "a conceptual or causal system of organising and grouping phenomena along an analytical scale"[121] (Gibson et al 2000:220). It usually connotes relations of power and authority, typically in a top-down fashion. While the top-down aspect of the Vietnamese state administrative system has been observed and described, the contest of power at the lower levels and its challenge to this rigid conception of central-local relations has also been noted (see Section 2.3.3. for a discussion on the verticality versus the horizontality of administrative structure). Hence the hierarchisation and dispersal of power in the Vietnamese state administrative system cannot be understood in a purely vertical or horizontal manner. After considering this literature and its resonance in my empirical material (where the public-private divide for instance blurs the strict levels in a hierarchy), I understand and use the term hierarchy in the Vietnamese state administrative system in a structural sense than a relational sense. I could have also referred to the Vietnamese administrative structure, but hierarchy was used because I am referring to the vertical arrangement of state relations, and its structuring of the passage of information.

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[120] See Section 2.3.4

[121] Gibson et al (2000) hence differentiate between nested and non-nested hierarchies. Nesting refers to whether groups of objects of processes at a lower rank are contained in the groups at higher ranks. There are two types of nested hierarchies: inclusive and constitutive. Ordering in inclusive hierarchies is such that "phenomena grouped together at any one level are contained in the category used to describe higher levels". In constitutive hierarchies, lower levels can combine into new units with new properties, e.g. living organisms. Non-nested hierarchies are also exclusive hierarchies, i.e. those where objects in higher levels do not contain those at lower levels, e.g. military ranks.

The media short-circuits the hierarchised flow of information in the state administrative system in two ways. First, the media is employed as part of inspection team's name-and-shame strategy: they are invited to go along to inspections so that they can report on the industrial polluters caught and potentially increase the social pressure on the polluting factory to change its behaviour (*Interview: Can Tho DoNRE Inspectorate, 13.09.11*). This shortening of the top-to-bottom flow of environmental information is a short-circuiting of the administrative set-up between the province and the household: whereas the rest of the DoNRE's environmental work is not communicated to the public, or the IZMB fails to publicise environmental information about the IZ to the public, news of environmental violations skip the administrative set-up between the province and the local household. Second, the media is an alternative to the official letters of complaint for the local households. News agencies have hotlines through which they receive tip-offs for potential stories (*Interview: Tuoi Tre new agency, 27.10.11*). The media thus flattens the hierarchy of hamlet-commune-district-province that a letter of complaint would have to go through in order to draw attention to an environmental issue. It is hence also through the media that the local households are aware of the environmental pollution resulting from industrial pollution and the measures taken by other households in other regions.

However, the field data suggested limited efficacy of the media's role, both from the households' and the media's perspectives:

> "Yes, the media is very important, they are the information system for the masses. They reflect urgent social issues. They publish the problems (of the local households) in the newspapers, but *at a certain level, the issue just disappears*. The *media had no effect on the problems*... The journalists and reporters came, they took photos and videos and even showed them on television, *but nothing changed*." (*emphasis mine*)(*Interview: Can Tho Phuoi Thoi ward area manager, 17.02.12*)

> "Only occasionally does the press get invited along to inspections… The press joining inspections is not effective. It is merely the tip of the iceberg. In Can Tho, it is not like Ho Chi Minh City where the environmental police go along. Can Tho doesn't and hadn't had large-scale checks, and the press cannot have individual inspection." (*Interview: Tuoi Tre news agency, 27.10.11)*

Moreover, Can Tho was the only province in which the local households had spoken to the media. The media was not present in the strategies of the local households or inspection teams in An Giang, Soc Trang or Hau Giang, other than as a source of information about environmental impacts of industrial production in other regions in Vietnam:

> "People in other areas of Vietnam, they protest, but here the people they don't want to sue." (*Interview: Household 1 in An Hiep commune, 03.11.11*)

Also, in my collection of media reports, I observed considerably dense coverage of instances of industrial pollution in the Southeastern and Northern regions; this might be both a function of the extent of advanced industrialisation in these two regions, or that many media agencies are based in Ho Chi Minh City and Hanoi. A reporter from the North shared her opinion that issues in the Mekong Delta barely make it onto the news radar because it is too far from the North (*Interview: VietNam Net journalist, 11.01.12*). Insofar, the low efficacy of the media might be due to its low presence and coverage, as evinced by the absence of an "independent"[122] news or media agency based in the Mekong Delta: for instance, the members of the media that the Can Tho Inspectorate invites on its inspection tours are from MoNRE's new agency, and from the state-owned Can Tho City TV station (*Interview: Can Tho*

[122] The independence of the media in Vietnam is a question of scholarly debates. Freedom of press is improving but independent and critical reporting is rare.

DoNRE Inspectorate, 13.09.11). No "independent" news agency reporter was present. There are two main points about the nature of the media's work with regard to industrial pollution coverage in the Mekong Delta: the media's participation in the inspections is intended and decided by the state, and its ad hoc reporting had limited effects on both the polluters as well as the higher levels of the state administrative system.

The field findings thus present contradictory tendencies that challenge the conceptualisation of the media as an extra-structure actor with an ability to skip levels in the administrative hierarchy. While it is not technically or explicitly a member of the state administrative system for environmental protection in IZs, the media's participation has become required as a strategy of the other actors. But, its participation is also ultimately contingent on invitation. It is both not part of the set-up, and sometimes part of it; and so, its ability to flatten the top-down hierarchy in the flow of environmental information is compromised. With regard to its ability to flatten the bottom-up hierarchy in the reverse flow of feedback on the environment, the absence of the media from the majority of my case studies, and the recounting that "a certain level, the issue just disappears" (*Interview: Can Tho Phuoi Thoi ward area manager, 17.02.12*) would lead to a contrary conclusion. This discussion of the media's role is preliminary, because the IZs are hardly operating at full occupancy rates, and the dynamics of anti-pollution organisation remain to be seen. As the Hau Giang IZMB puts it: "What is there to complain about, there is hardly any industrial production here." (*Interview: Hau Giang IZMB, 08.11.11*). Moreover, ultimately, the media is a source of information about pollution, its causes, and its effects:

> "People here are very scared of cancer... When the zone is fuller, when environmental pollution is worse, I will sell this plot of land.... (*later, when asked how she knew pollution would cause cancer*) *Through the media*... When I go see doctors, the doctors consulted me about that. Poison from the environment causes cancer. There are *also incidents in national industrial zones*. Steel and concrete are the worst... *In developed countries, steel factories like these are shoved to isolated islands*. The government mobilised this steel factory to operate here. It is so terrible." (*emphasis mine*) (*Interview: Household 1 in Binh Hoa Commune, 06.12.11*)

Earlier, in Section 4.2.3, I argued that the lack of environmental information about industrial pollution is linked to the local households' perception of, and attribution of meaning to the IZ. To this extent, the media could influence community-based regulation of industrial pollution; although this remains to be seen.

Other extra-structure/external actors

Another two groups of actors external to the state administrative system for environmental protection in IZs are the international donor programmes and the research-profit programmes. These actors are extra-structure in that they are neither part of the Vietnamese administrative hierarchy nor involved in monitoring and enforcement. International donor programmes in the field of environmental management are increasing, which warrants an examination of their presence as non-state actors. Based on *my* empirical observations in the IZs and the Mekong Delta, environmental management programmes financed by official development aid have quite limited direct practical influence. The VPEG (Vietnam Provincial Environmental Governance) project[123] has been running in

[123] "The Government of Vietnam and the Government of Canada signed a Memorandum of May 2, 2008 to formalize their commitment to cooperate in the field of environment by the State Project Manager for the Environment at the provincial level in Vietnam (VPEG)." Its explicit purpose of the project is to "support sustainable development through strengthening the state management of environment". (VPEG Website, last accessed 28.06.2011) The project also supports the Ministry of Natural Resources and Environment to improve the effectiveness of policies and laws on industrial pollution management. (VPEG Website, last accessed 28.06.11)

Soc Trang, amongst other provinces, for more than a decade, and works on capacity building of industrial pollution management at the local level, and implementation of regulations on industrial pollution management. Despite the scale and length of this project, and the IZ's role as an industrial polluter and the IZMB as pollution manager, the IZMB had not even heard of the project. Even the EPA had difficulties explaining what they did (*Interview: Soc Trang EPA, 28.06.11*). What might have constrained the outreach of the VPEG project might be that it, as an inter-governmental collaboration, works within and with fixed elements of the administrative structures: the MoNRE is the project host institute and the provincial DoNREs are the participants. Additionally, the omission to involve the IZMB casts doubt on the nature of the often-mentioned "coordination" between state agencies. An alternative perspective is that donor projects are ultimately voluntary programmes, and this curtails the extent of their impact.

Another example of an international donor programme having an effect on wastewater management is the JICA's loan. The Japan International Cooperation Agency (JICA) is Japan's official development aid agency and its engagement in Vietnam include both technical cooperation projects and official development aid loans in education, health, water resources, disaster management, governance, transportation, environmental management, urban and regional development, agricultural and rural development, and citizen participation. On 30 January 2013, JICA loaned the Vietnam Joint Stock Commercial Bank for Industry and Trade ("VietinBank"), money for the "utility management for industrial zones and water supply project". Under this scheme, the JICA provided loans for facility construction to three "special purpose companies"[124] that "provide utility services, such as wastewater treatment and electricity supply to environmentally friendly industrial parks in Vietnam, and construct, operate, and maintain a water treatment plant and related facilities that use surface water". The motivation of JICA is to prop up a "model case for public-private partnerships", to "lead development of PPP projects in the field of infrastructure". The special purpose companies are so-called, because they were set up as joint investments with Japanese companies. The loan is provided by JICA to VietinBank, which will then lend money to the special purpose companies.

Research-profit programmes are research programmes which are funded by foreign governments, with the involvement of both research institutions and companies, and intended to disburse foreign aid while exploring research opportunities and opening up a foreign market for home companies. The AKIZ project in Can Tho is one such example. Its aim is to set up a centralised WWTP in Tra Noc IZ, and both German research institutions and companies are involved in designing a wastewater management model. Another example is from An Giang, where an investor is interested in using the wastewater from aquaculture processing factories, which is rich in organic material, for biogas recovery, in other to earn emission credits under the Clean Development Mechanism of the Kyoto Protocol[125] (*Interview: An Giang DoNRE, 15.07.11*). These research-profit programmes differ from the traditional capacity-building donor programmes in that, in order to design a viable waste treatment model, they involve the polluters, who have an incentive to participate for their own reduced treatment costs. Yet, even without the stain of monitoring and enforcement, the AKIZ project reported that the factories do not share accurate

[124] Thuan Dao Utility Management Company Limited, Phu An Thanh Utility Management Company Limited, and Ben Luc Water supply Company Limited were listed in the press release. The former two companies are in Long An Province.

[125] The Kyoto Protocol is part of the United Nations Framework Convention on Climate Change, and it introduced the division of signatory countries into industrialised and industrialising countries, whereby the former would commit to CO_2 emission limits. The Clean Development Mechanism and the Joint Implementation Projects are two devices for the industrialised countries to share less polluting technology with the latter, to the end of reducing CO_2 emissions.

figures about their waste streams, which unfortunately prevents the realisation of the mission[126] (*Personal communication: AKIZ researcher, 11.09.11; Personal communication: AKIZ project coordinator, 14.12.11*). The AKIZ project ultimately failed because the IZMB did not trust that the wastewater management model was the most cost-efficient, and the project coordinator could neither access nor navigate the communication and relationship between the IZMB and the infrastructure developer (*Personal communications: AKIZ project coordinator*). This aligns with the earlier observation about polluters' rationality[127]: it is not about solving the problem, but having something that looks like a solution. This polluter rationality is apparently related to the incentives and disincentives of the monitoring and enforcement mechanisms in Vietnam: sanction sums are low, and inspections only happen biannually. These system characteristics curtail the promise of this group of extra-structure actors for providing an alternative solution to state-financed waste treatment systems in which the public carries the cost of private behaviour. Certainly, the presence and participation of these extra-structure actors could not be determinant of environmental management success. But, environmental policing and media reporting are ultimately mitigatory measures, while the promise of the extra-structure actors is that they could provide pre-emptive solutions. Hence, the study of successful research-profit projects would be illuminating for the socio-spatiality of environmental management in Vietnam.

This last section introduced three groups of actors who influenced wastewater management practices despite being external to the usual monitoring and enforcement set-up. The environmental police are not bound to any government level in the state administrative system and thus have more freedom to act; but they are then limited by the grey areas of written law and the right to sanction as something uniquely within the ambit of the inspectorate's operational territory. The media holds promise for flattening the hierarchy, both in terms of the top-down relay of environmental information, and the bottom-up feedback on environmental pollution. But, it is only allowed to participate upon invitation. The capacity-building programmes run by international organisations and research-profit projects, being truly external to the Vietnamese system, apparently fail to succeed in improving environmental management despite the funds and capacity, because it is not integrated enough into the state administrative system and the relationships between its state agencies. Despite being external to the structure, all three groups of actors bump up against elements of the structure.

Additionally, this research has not been able to provide the perspective of the polluting companies because of a lack of access, and will hence borrow from the accounts of Vietnamese researchers who have had access. Le Quang Thong et al (2004) surveyed 32 IZs in four most industrialised provinces – Ho Chi Minh City, Binh Duong, Dong Nai and Ba Ria-Vung Tau – and reported that the small- and medium-sized enterprises considered individual WWTPs as well as participation in the most cost-efficient CWWTPs to be cost-prohibitive. But companies with more capital, such as multinational companies, complied more effectively. The MoNRE suggests that investing in an individual WWTP adds about 20% to production costs (Le Mai 2003). Where a CWWTP was present, companies refrained from use because they considered the fee structure unfair: generally, companies are charged for the amount of water they use, rather than the amount of wastewater they discharged, or its constituent pollution

[126] The access to the Vietnamese market for the companies fell victim to the failure of this first mission.
[127] See Section 4.2.1

load (Le Quang Thong 2004). Moreover, sanctions for discharging wastewater did not amount to effective deterrents not to pollute or incentives to construct a WWTP: the fines were so low (usually around 200 USD) such that it made more economic sense to break the law than comply with it (Le Quang Thong 2004). Companies capitalised on the weak enforcement abilities of the state agencies: they polluted more between the infrequent inspections (Le Quang Thong) and few companies actually paid the fines (Nguyen Mau Dung 2008). Interestingly, the payment rate of wastewater charges was found to be higher within the industrial zones (Nguyen Mau Dung 2008). Perhaps the problem begins earlier. It has been opined that IZMBs suffer from a conflict of interest which motivates them to expedite EIAs to speed up the establishment of the IZs (Le Thi Van Hue 2011); one study in Bac Ninh Province in Northern Vietnam found that 85% of the paper-making plants in that province did not submit an EIA prior to beginning operations (Nguyen Mau Dung 2008). Parallel to this is the failure of companies to plan for a WWTP: they subsequently lack the land area needed to install a suitable treatment plant (Nguyen Mau Dung 2008). The fundamental issue seems to be that the companies did not adequately understand environmental regulations (Nguyen Mau Dung 2008). Because I do not have depth of data, I will not attempt to analyse this data with reference to the empirical socio-spatial categories I have employed in this Chapter 4.

4.5 Concluding remarks: multi-dimensional socio-spatiality

This description of wastewater management failures in the Hau River industrial zone relied on several socio-spatial concepts. First, there is the symbolic meaning of the IZ for the provincial authorities, which is demonstrated by unusual naming practices that seek to elevate the status of planned industrial clusters, as well as the authorities' ironic payment – the IZ was supposed to bring in money, not cause them to spend money – for the development of the IZ's infrastructure. The provinces had to have an IZ. Then, despite the underwhelming appearances of the IZ, and the fact that it had not generated the employment it promised, the IZ remains associated with the promise of better lives for the local households. The persistence of this meaning seems to have been helped by the IZ's extra-local existence, in which the locals were excluded from its planning and implementation, and the aloof, administratively-far away, and unpopular IZMB that bears the brunt of the locals' dissatisfaction. The symbolism and place-meanings of the IZ affects expectations of environmental management: the provincial authorities are not inclined to press for strict treatment of the polluting factories so as to create an investment-friendly environment, and the local households hold neither the IZ nor its polluting members, but rather the IZMB, responsible for fixing the problem.

Second, the two main monitoring and enforcement mechanisms, the inspection and the complaint, demonstrate that levels of government and organisational operational boundaries within the state administrative system for environmental protection in IZs have a framing effect on the actors' actions and inactions. In inspections, which require several state agencies to coordinate their actions, unclear operational boundaries are obvious through the bureaucrats' persistent references to "the law" and its calls to assume responsibility for "coordinating". Another way in which the boundaries of their operational territories are compromised is through the unclear public-private divide which means some polluters cannot be prosecuted: none of the provincial DoNREs held the infrastructure developers accountable for the missing centralised wastewater treatment plants since the infrastructure developers

were public entities performing private business functions, and it was the ministerial inspectorate that required provincial authorities to sanction these entities. With regard to the complaint mechanism, the extra-locality of the IZ resurfaces: there is a mismatch between the physical location of the IZ (where pollution effects are felt) and the management level of the polluters. In order for local households to access redress, they have to surmount the hamlet-commune-district-province hierarchical ladder, since the IZ is managed at the highest provincial government level. Attempts by the actors to skip government levels (in the case of Binh Long IZ in An Giang province) or redefine their operational boundaries (as in An Nghiep IZ in Soc Trang province) affirm than refute the existence of these government levels and blurred operational boundaries, since the actors exhibited an awareness of how these circumscribed the likelihood of solution. The state administrative system's levels of government and organisational operational boundaries shaped the way the actors reacted to the problem of environmental pollution from the IZ.

Third, there were actors who were not technically part of the institutional set-up for monitoring and enforcement, whose practices influenced wastewater management. The environmental police could perform independent and covert checks, but were ultimately checked by their inability to issue sanctions, a right held solely by the provincial inspectorate. The media could have flattened the informational hierarchy of: (a) top-down flow of environmental information, through its reporting on polluters it witnessed during its participation in inspection tours, and (b) bottom-up relay of complaints by helping pollution problems gain more momentum through publication. But its participation depends on its being invited by the actors (inspection team, or local households) in the institutional set-up. A new group, capacity-building programmes and research-profit projects, posed an interesting alternative in offering preventive than curative end-of-pipe solutions, but both instances I was aware of had failed to improve environmental management in IZs, mainly because they were not sufficiently integrated into the institutional set-up around environmental protection in the IZ.

This description is thus socio-spatialised in that it simultaneously drew upon several spatial dimensions to explain how actors are enabled or constrained in their actions. Rather than implying causation between one spatial dimension and success or failure of environmental management, this investigation of wastewater management failure explored how several spatial dimensions interact and are interrelated. The starting line is that the symbolism of the industrial zone draws on place-meanings and place-making, and the state administrative system for environmental protection in IZs draws upon both territory (or territoriality and boundaries) and scale. But these socio-spatial concepts overlap in empirical reality. The industrial zone is also a place with material and immaterial boundaries drawn by those in power to exclude those without power, which turns it into a territory. Its immaterial boundaries – erected through implementation and management at a higher administrative level that cannot be challenged – is also an example of a "re"- or "up"-scaling strategy. Then there is the state administrative system, which matches territory to scale: every level of government administers a physical area. That territory supports the construction of a scale (as in making a new province), and that rescaling is a way of drawing a boundary and making a territory (as in vesting management of IZs at a higher government level) requires us to use and consider both concepts together. This underlies the characterisation of this work as a multi-dimensional socio-spatial analysis, because not one single spatial dimension has complete explanatory power, but often involves another spatial dimension. However, this is not to say that single spatial concepts have no merits.

Place-meanings and place-making

Because place has been variously defined and theorised, I begin with a broad definition – places are particular locations, sites of everyday practice, that are imbued with meaning (Cresswell 2009:176) – that stresses an experiential component as well as a power perspective. This definition encompasses various definitions of place, ranging from place as a mere physical location or site, place as cultural or social location, place as context, place as socially-constructed, and place as a social process in itself (Staehli 2003). In this definition, people do things in places, and these actions produce the meanings that place might have; but the construction of these meanings, their reproduction and contestation, implicate the exercise of power. For instance, rules define what is in place or out of place[128] (Sack 1993).

But place itself has power: even without rules, place exerts its power over people through distance and the relative location of people and things affecting how people interact (Sack 1993). Place has power apart from the powerful people who control them, in the form of its architectures of enclosure, segregation, display, and symbolisation of power through distinctive building style and type (Gieryn 2000). Just as human practices and institutions produce the place itself, place makes those human practices and institutions (Giddens 1984 cited in Gieryn 2000). This agency that places have means they can: emplace difference and hierarchy; spawn collective action by bringing people together or by becoming the object of that collective action; express normative landscapes; create proximity, interaction and community, building in engagement or estrangement; or become the subjects of emotional and sentimental bonds that people form (Gieryn 2000). Yet, these instances of how place itself can exercise agency show that the power to make places overlaps with the power places then have. The agency and power places have thus invites a closer look at place-meanings, how they are made and contested and decided, and how enduring they are.

Place-making, or the creation of place meaning, can happen in several ways. Discourse is one mode. For instance, Martin (2003) studied how neighbourhood organisations portrayed activism as grounded in a particular place, and their discourse – "place-framing" and "place frames" – intentionally obscured the social differences between the residents and emphasised the physical condition of the place and the residents' daily life experiences in it. The interaction and communication with other places can also provide a basis of comparison that serves to define places (Pierce et al 2011). Another way in which places are made is through its materiality and material structure (Cresswell 2009). The architecture of a place can express power relations as in the case of architectures of segregation or enclosure (Gieryn 2000). The most obvious of these is the use of boundaries (Castree 2004). Although place meanings can be contested, some place meanings endure, even when the power or material or discursive things that gave that meaning disappear (Kärrholm 2007). Moreover, the idea of contestation suggests that one meaning prevails, whereas meanings are subjective and so several meanings can co-exist. Massey (1997 cited in Raco and Flint 2001) suggests that meanings are situational: interests within a place are not homogenous and depending on the issue or controversy, different identities are called upon and constructed. Staehli (2003) points out how political strategy and goal can affect how place is defined: those who want to show that a place is organised in a way that reflects the power relations in society would define place as socially constructed, while

[128] This is a reference to Cresswell's work. See Cresswell, T. (1996) In Place/Out of Place: Geography, Ideology and Transgression. Minneapolis, MN: University of Minnesota Press

defining place as real, material, and fixed, would help those claiming primordial rights or property rights (p167). This multiple instrumentality of place, and multiplicity of place-meanings thus suggest that ultimately, power underpins these techniques, epecially if we understand power not just as "power over", but also in its facilitative enabling sense as "power to" (Allen 2003).

Focussing merely on the concept of place already allows us certain insights, such as the provincial state authorities' monopoly over power in meaning-giving and making. The provincial authorities' practices of giving meaning to the IZ – the drawing up of ambitious planning documents, the use of architectural design elements such as proper paved roads, gates, and an imposing gate, and the creation of a provincial state agency only to manage a few hundred hectares of industrial land – implicated the use of its political and social power. The local households' perception of the industrial zone as a promise of better lives was largely independent from the underwhelming appearances of the industrial zone or its failure to generate employment. That the meanings the local households associated with the IZ were congruent with those of the provincial authorities, despite contrary evidence, raises the question of why there is no contestation of this place meaning. This might be attributed to the authorities' monopoly over power, such that there is no counter-meaning through counter-representations of the IZ possible.

This begs the question of why power is so concentrated. It is possible to conceive of the provincial authorities' meaning-giving practices as reinforcing its power and the powerlessness of those around the IZ. There is a need to distinguish between the IZ as a place and the peri-IZ area as another place. The locals' experience of the IZ and the peri-IZ area, where they live, is marked by the IZ's physical boundaries. This is a monument of exclusion, and the provincial authorities' ability to exclude. Additionally, there are also immaterial boundaries that take the planning, implementation, management and control of the IZ away from the place where it stands: these techniques of exclusion reinforce power and powerlessness, by elevating the status of the IZ and immunising the IZ from local scrutiny, thereby preserving its given meaning from counter-representations.

Community and place

This distinction of the IZ and the peri-IZ area as two different places would also explain why no community regulation was observed. While I had suspected and expected some community organisation against the industrial pollution, my finding actually concurs with the research on community and place. It has been argued that the notion of community cannot be equated with a spatial, geographical area since that assumes homogeneity of interests in a place (Massey 1997 cited in Raco and Flint 2001:112), even though proximity might foster a common experience of problems and thus common interests (Martin 2003:730), such that "the setting, the geographical location, and the socio-spatial context of that neighbourhood" (Martin 2003: 731) matters for the formation of a collective identity and agenda. Martin (2003) studied how several neighbourhood organisations portrayed their activism as grounded in a particular place and scale, and found that the organisations had fostered a neighbourhood identity by glossing over the residents' social differences, and focussing on their daily experiences as well as describing the physical conditions of the neighbourhood. Hence, she argues that that community does not depend on *territory* but the identification of issues of common interests amongst a group of people (Martin 2003:730). This conclusion suggests that the place-meaning that matters for a collective identity is one with positive connotations (glossed-over social differences), and it finds support with my observations of the peri-IZ areas. The local

households interviewed had demonstrated a lack of attachment to where they lived, and indicated that they would move away if they had money. It has been previously observed that the people of the Delta are dislocated from local economic relationships, neighbourhood support networks, and a community of fellow language speakers, as a result of their employment-induced mobility (Taylor 2004:256). If this could be assumed of the peri-IZ areas, then the missing sense of community could stem from the lack of organisation and intentionality in forging a *positive* common identity.

Still, this begs the question of what it is about these peri-IZ areas that have prevented positive place-meanings (and consequently the possibility of a sense of community). Although Martin (2003) and Gieryn (2000) have singled out "proximity" as a likely place characteristic for community, the existing literature, both on community, and on communities in the Mekong Delta or Vietnam generally, has not really theorised on how place itself exercises power, as in what the inherent characteristics of places are that foster organisation. Instead, the literature generally either focuses on how organisations utilise notions of place (re Martin 2003) or treats place as contextual information (re O'Rourke 2003). My empirical material also suggests that the peri-IZ area prevents the formation of organisation against the IZ, because of the clear exclusionary message of the boundaries of the IZ. Thus, I now move on to consider the links between place and boundaries.

Place and boundaries

These empirical examples that call on the sole concept of place also show how working merely with the concept of place can limit understanding. For instance, the explanation of boundaries as exclusionary techniques in meaning-making and place-making brings us to the concept of territory, and shows how socio-spatial concepts easily overlap. Place also served as a starting point for Johnston (1991), who set out to consider *bounded* places and ended up theorising on territoriality. He asserts that much of the literature on place (by then) said nothing about bounded places or the possible importance of boundaries, and proposed that territoriality is a way through which the state exercises influence and control, and that territoriality sustains and enhances inequalities by excluding those outside the territory.

The IZ reconceived as a territorialisation project of the state explains how inequalities between those inside and outside the territory are produced, sustained and enhanced, and provides a larger socio-spatial context to the dynamics of the peri-IZ area. Land-use planning is an example of an important instrument of territorialisation projects of the state to which Johnston (1991) refers, since people and resources are rearranged and rules regarding how what can be used by whom are created. Land-use planning thus produces and reproduces social relations of power, since the plans serve the dominant political economy as much as they challenge and reshape existing social configurations (Perry 2003 cited in Lestrelin et al 2012:583). The establishment of industrial zones in the Mekong Delta is an instance of land-use planning, and as such, a territorialisation project of the state. Kelly's (1998) account of land-use conversion to industrial purposes in the "rice bowl" provinces of the Philippines showed that the change in the socio-economic and even physical landscape of the rural areas is intensely political: at the national level, the developmental strategies that aimed at industrialisation rather than agricultural modernisation allowed circumvention of policies on land conversion, and at the local level, flexibility in interpretation of legislation by local governments in determining land uses has blurred public-private roles. His account also finds parallels with

the establishment of industrial zones in the similarly agrarian Mekong Delta, where modernist industrialist developmental visions and policies have led to essential land expropriation with low compensation rates, and public-private divides have allowed those at the divide to continue profiting at the expense of those displaced by the IZ. The IZ, the bounding of previously agricultural land for a new purpose, can be reconceived as territorialisation project that privileges the state narrative of development over the local narrative of livelihoods, and perpetuates the disenfranchisement of the local in deciding.

However, understanding the concept of boundaries only in terms of its use in territoriality and territory-making is quite a restrictive conclusion. For Johnston (1991), (material) boundaries produce places with meanings of inequality and exclusion. But this is not the only message that can be communicated by a boundary, and not the only reason for which boundaries are erected (Sack 1986). Boundaries can also express other social relations, such as community and ideology (Delaney 2009). But, this should be considered in light of how the concept of boundaries in human and social geography has been traditionally understood as political, national, borders, and theorised as such; still, newer ideas in interdisciplinary studies have started to investigate the role of boundaries in the construction of socio-spatial identities, and boundary narratives and discourses (Paasi 2004). Boundaries exist in different spatial contexts, ranging from the international and national to the regional and local/administrative and metropolitan (Newman and Paasi 1998:197). It has been suggested that the lower the scale of the boundary (i.e. not the national but the local administrative), the *less physical* (emphasis mine) and territorial it is, and the more social, personal, and symbolic it becomes, with a far greater impact on daily behavioural patterns of most individuals (Newman and Paasi 1998:200). Such a link between boundaries, material and immaterial, and identity is relatively more depoliticised than the previous concept of boundary as a means of territorialisation. This broader conception of boundaries can be drawn upon to substantiate my statement in the previous sub-section that the boundaries of the IZ, both material *and immaterial*, produce the peri-IZ area as a place that is disempowered or disenfranchised, and hence does not support community identity that can collectively challenge changes.

Moreover, the actual effect of a boundary might not be the intended effect. While Johnston understands the making of places through the act of bounding or the use of boundaries as the cause of conflict, Pierce et al (2011) see conflict as producing places rather than merely playing out in certain places[129]. This is a subtle distinction. The act of bounding is not a conflict. The boundary itself might not be contested, and the lack of conflict would not provide an identity for the place outside of the boundaries, or a collective identity for the people in that place. I had conceptualised the IZ and peri-IZ area as two different places, but perhaps the peri-IZ area is not a "place" in the sense of not having been made. The efforts of state territorialisation have conferred meaning – primarily – on the IZ, and only collaterally on the peri-IZ area. In the absence of social conflict, or meaning-making and meaning-contestation, the peri-IZ area cannot really be fully theorised as a place.

[129] They argue that places are relational, being produced through networked politics; thus they see the need "to consider the interconnections and co-constituencies among place, networks, and politics, by identifying the places they produce, the dimensions of place-framing, and the multiply-positioned actors and places inherent in and underlying the conflicts" (Pierce et al 2011:67).

Territory and territoriality

The conceptualisation of the place-meanings conferred through the act of bounding the IZ has already brought the discussion from "place" into "territory". But the lens of territory and territoriality can still enrich this instance of environmental management analysis in other ways. I first begin with a brief overview of how territory and territoriality have been defined and conceptualised, before going on to discuss how territoriality thickens our understanding of the IZ and the problems of wastewater management in it.

The distinction between territory and territoriality can be seen as one of means and ends, or also one of theoretical focus. Territory is an area that consists of a boundary, the inside, and the outside, the excluded; because a boundary is drawn and someone excluded, questions of territory involve questions of power (Delaney 2009b). Since the act of territorialisation is often the prerogative of the state as a derivative of its sovereignty, questions of power and the state dominate academic discussions on territory. Territory is seen as the link between state and nation (Taylor 1995), the ultimate state space (Painter 2010) even though the era of globalisation has apparently brought about a re-territorialisation and de-territorialisation of the state (Brenner 1999). Sack, however, advanced a theory of *human* territoriality that was relational. Territoriality is the attempt to exert control, influence, or affect people, things, or relationships in a geographical area (Sack 1986), whereby the territory, the control of the area, is merely the means. Because Sack's work on human territoriality drew attention away from the state as the sole repository of power, political geographers have considered his conception of territoriality as being non-political[130] (Agnew 2000, Paasi 2003, Cox 1991, 2003). The concept of territoriality has facilitated a reconceptualisation of territory as social constructs, as social processes of meaning-giving and renegotiation rather than mere areal things (Paasi 2003); but this blurs the conceptual distinction[131] between the two. While both territory and territoriality involve space, power, and meanings; in questions of territoriality, the relationship between the controllers and those being controlled (be it in compliance or defiance) takes the centre-stage (Sack 1983), whereas questions of territory focus on the area itself as a material and spatial expression of the social relation (Delaney 2009b).

Sack's theory of human territoriality is the single most well-elaborated thesis, and most other works can be considered commentaries on specific aspects of his theory. Because the area is secondary and the relationship is primary, Sack asserted that cause and effect cannot be separated, and thus referred to the functions of, reasons for, and effects of territoriality as "tendencies". He identified classification, communication (through a boundary), and enforcement of control and access to be the three key components of territoriality, but other "tendencies" include the reification of power, the displacement of attention from the relationship between the controller and the controlled, the impersonalisation of relationships, the clearing of a space through a neutral means, the function as a container or mould for spatial properties of events and attributes, the conceptual emptying of spaces, and finally, the multiplication of territories. He then goes on to consider the importance of these tendencies in our societies – which he characterises as "hierarchies of territorial organisation" – and proposes that they facilitate hierarchy and

[130] Paasi (2003) for instance differentiates between state and human territoriality, although Kärrholm (2007) considers Sack to fall under the politico-geographical territoriality as opposed to the latter, because of his non-engagement with the psychological effects.
[131] Sack (1983) himself argues that territoriality is a social construct and not a product.

bureaucracy, dividing and conquering, secession or reduction of control, *etc.* [132]. His function-based approach has been criticised for failing to account for irrational motives, unintended effects and consequences of territoriality, and other types of social relations that are not about hierarchy and maintenance of domination and subordination (Delaney 2009b). But, his hypotheses about territoriality's ability to conceptually separate and recombine space and substance, and the representation of a territory becoming powerful in itself are interesting for our comprehension of the irony of industrial zones remaining symbols of modernity despite their visible lack of success.

Sack argues that "territoriality in fact helps create the idea of a socially empty space" because it "conceptually separates space from things and then recombines them as an assignment of things to places and places to things" (Sack 1983:59). "Science and technology make practical the idea of repeatedly controlling, filling, and emptying vast territories; and on a smaller scale, technology and working conditions produce purpose-built places such as factories that are territorial moulds or containers for indefinitely varied economic activities, or when they are empty, for nothing at all." (Sack 1983:62) When things to be contained are not actually present in the territory (Sack 1983:59), asserting territoriality (of the industrial zone) separates its actual content from its being a concept and space. An alternative theorisation offered by Sack is that territoriality reifies power, and could also displace attention from the nature of the relationship to the territory. This combination confers an element of "magic" on the territory in that the representation of the territory becomes powerful in itself. Another possibility of territoriality is the obscuring of social conflicts by territorial conflict and displacement, as is the case when the territory itself draws attention away from the relationship between those seeking to exercise control over the area, and those being controlled, relationships become impersonalised, and the territoriality engenders the multiplication of more territories. Thus, combining these three hypothesised uses of territoriality, the power of the state to decide without or contrary to the local people is reified by the establishment of (more and more) industrial zones, which when established distract from the unequal relationship between the state and the people. The fact that the industrial zones are practically empty does not reduce their symbolism, or reignite potential social conflicts because of the actually unnecessary social displacement they had caused, because the set-up around the industrial zones and their multiplication, asserts the power of the state while drawing attention away from the inequality towards the representational power of the industrial zone.

However, a challenge faced by this work in applying the territoriality and territory lens is the question of whether a material element is vital to its definition. My conceptualisation of organisational operational boundaries as a form of marking out organisational territory is unsupported by the Anglophone literature on and theorisation of territory, which fixes on land or a geographical area. Painter (2010) has considered various definitions and found the Anglophone usage of territory to be "harder" than the romantic languages in stressing "boundedness", institutionalisation, and juridico-political concerns; while the French or Italian languages conceive of territory as

[132] He then goes on to consider the importance of these ten tendencies in our societies, which he characterises as "hierarchies of territorial organisation". Sack proposes 14 combinations: (a) hierarchy and bureaucracy, (b) long and short range planning and stages, (c) territorial definition of social relations, (d) efficient supervision-span of control, (e) conceptual separation and recombination of space and substance, (f) magic – as in representation becoming powerful in itself, (g) the mismatch of territory and process and spillover, (h) territoriality appearing as an end and not a means, (i) momentum to create inequalities, (j) dividing and conquering, (k) obfuscation by assigning wrong scale territory, (l) social conflict obscured by territorial conflict and horizontal displacement, (m) obfuscation by stages whereby something is clear at the national level but not at the local, and finally, (n) secession or reduction of control.

region, or place, and do not take for granted the existence of boundaries (p1101). Although the definition of territory in the International Encyclopaedia of Human Geography is less political-legal – "a bounded, meaningful social space the meanings of which implicate the operation of social relational power" (Delaney 2009b) – the requirement of a material element still persists.

My metaphorical use of territory does not fall back on a material element, but rather, on an intangible "area" and a human behavioural aspect. It is the third of the three definitions of territory that can be found in the Oxford English Dictionary, and the only one not bound to jurisdiction or land: "an area of knowledge, activity or experience". The only instance of a similar use I found was from the field of organisational research, where Brown et al (2005) defined territoriality as "an individual's behavioural expression of his or her feelings of ownership toward a physical or social object" which "includes behaviours for constructing, communicating, maintaining, and restoring territories around those objects in the organisation toward which one feels proprietary attachment" (p578). The concept of psychological ownership that underpins this definition is what I consider socio-spatial about organisational operational boundaries. My metaphorical use of territory also shares with the Anglophone political geographical usage the common denominators of jurisdiction and the construction of boundaries, whether tangible or not. Insofar as the work on territory has already gone on to consider the experiential aspect of social construction of boundaries as well as the political aspect of the extension of power beyond state power, what crucial role does a physical area play that would impair theorisation of territory and territoriality? It is this idea of a space for action that I explore in the next Chapter, on the use of law to create spaces of ambiguity that facilitates omission than action.

Scale and environmental governance

Indeed, it might be questioned why it was necessary to involve territory in my description of the Vietnamese state administrative system for environmental protection, and why scale alone did not suffice. After all, scale plays a central role in much of the literature on environmental governance that discusses the implications of space. Thus, I shall next consider the implications of the work done on multilevel/multiscalar environmental governance for this work on wastewater management in Vietnamese IZs.

The departure point for most works at the interface of space and environmental governance is the rescaling of environmental governance. This rescaling follows the "hollowing out of the state"[133], which comes from state functions being redistributed upwards to regional or international environmental governance institutions, downwards towards local governments, and outwards towards non-state actors (Reed and Bruyneel 2010). Thus some of the issues with which literature on multiscalar or multilevel environmental governance engages with are: the appropriate scale at which an environmental resource should be governed (Moss and Newig 2010, Newig and Fritsch 2009), types of multilevel governance structures and their effects on environmental performance (Wälti 2004, Rockloff and Moore 2006), and the politics of scale and its conceptualisation within environmental

[133] Jessop (1994) was the first to notice that the national state was hollowing out, which involved two contradictory trends. Whilst the nation- state remained politically significant and retained much of its national sovereignty, its capacities to project its power even within its own borders have been weakened by the shift towards internationalised, flexible production systems and by the growing risks emanating from the global environment. This loss of autonomy created both the need for supranational coordination and the space for subnational resurgence. "Thus the powers of nation-state are being limited through a complex displacement of powers upwards, downwards, and outwards" (p24).

governance (Bulkeley 2005, Lebel et al 2005, Cohen and McCarthy 2014). Empirically, it draws from topics such as local participation, decentralisation, civil society participation, *etc.*. The strong normative slant in the research on scale and environmental governance (Newig and Fritsch 2009) means that analyses are often followed by policy recommendations to pursue a certain governance system, usually multilevel and polycentric, or to "re-scale", usually through decentralisation because of a belief that "local is better". A body of empirical works have emerged to challenge the evidential basis of such recommendations (Rockloff and Moore 2006, Newig and Fritsch 2009).

Although my work engages with environmental governance, it finds little inspiration from the literature on multilevel environmental governance, which refers to the multiple sites at which an environmental resource is governed. Governance is used in contra-distinction to government, to indicate the larger focus that goes beyond only state actors. The environmental resources studied are usually of a global nature, or rather, at least transboundary, and hence the characterisation of "multilevel", since the local, the national, and the supra-national are involved. While industrial water pollution could be transboundary, the empirical focus of my work is within the national boundaries of Vietnam; my multiple sites of governance do not overlap with the usual supranational-national-local analytical foci, but are the sub-provincial levels usually collapsed under "local".

Moreover, scale in the multilevel or multiscalar environmental governance literature is a nebulous concept. This stems from the fact that various disciplines engage with the question of environmental governance with different conceptual definitions. The difference in usage by human geographers and ecologists is almost dichotomous and contradictory. While human or critical geographers see scale as socially constructed and contested (i.e. the politics of scale), such that their job is to study the processes that make and change these scales; the ecologists perceive scale to be a given empirical observation category, an entry point to studying ecological processes. Examples of the different scales they engage are jurisdictional, institutional, spatial, temporal, management, and networks (Cash et al 2006). While human geographers do not differentiate between scale and level, ecologists consider levels to constitute a scale (Sayre 2005) such that multilevel environmental governance and multiscalar environmental governance refer to two different analytical phenomena. But, there have been attempts to synthesise a common understanding to bridge the disciplinary gap (Sayre 2005, Gibson et al 2000), mainly through specifying the difference between scale and level, and where or how an analysis of interests and politics might be incorporated. Although the notion of a "politics of scale" has been taken up (Lebel et al 2005, Cash et al 2006, Dore and Lebel 2010, Moss and Newig 2010), empirical analyses of scalar politics in multilevel environmental governance are nascent (Budds and Hinojosa 2012, Rangan and Kull 2009). The potential of these attempts to facilitate the differentiation between level and scale in the human/radical geographic analytical vocabulary is also unknown.

Because my work has inductively identified socio-spatial dimensions as elucidating new aspects of the problem of wastewater management, the literature on multilevel environmental governance is only interesting insofar as it can provide new ways of thinking of socio-spatiality in environmental management. While there has been recognition of the insights that incorporating a "politics of scale" analytical lens might offer, this has only been taken up at a preliminary and theoretical level. Even within the body of work that explicitly engages with the politics of scale in

water governance, scale itself is not immediately apparent[134], and scalar politics involve other socio-spatial strategies, such as territorialisation[135]. The conceptual nature of a politics of scale poses a challenge for empirical operationalisation: for instance, Marston et al (2005) have argued for a flat ontology of scale, and Perramond (2012), while sympathetic to it, ultimately operationalises his empirical study by looking at the actions of the social actors at different scales, thereby reaching the conclusion that the academic discussion on a politics of scale is abstract for everyday users, who still do engage with scale for their aims. Budds and Hinojosa (2012) try to overcome such material conceptions of scalar politics in water governance, by using the concept of "waterscape" that does not structure analysis according to traditional spatial scales and institutional hierarchies. Thus, the relevance of the existing empirical applications of politics of scale in environmental governance has been methodological, than analytical. Hence, I look directly to the literature on the social construction or the politics of scale.

Scale, its social construction, and scale-jumping

The term "politics of scale" was apparently first coined by Neil Smith[136], and the further conceptualisation of scale as socially constructed and produced has been mostly the contribution of Anglo-American geographers. Scale is socially produced as the resolution of processes of cooperation and competition between and among social groups (Herod 1991); and because scale is materially constructed, metaphorically used, not ontologically given, neither socially nor politically neutral, and expresses power relationships (Swyngedouw 1997), it is problematic to conceptualise geographical change or restructuring at a given spatial scale. The "politics of scale" seeks to draw attention away from scale itself, towards the study, comprehension, and theorisation of the processes that produce them (Swyngedouw 1997). After all, in the politics of scale, it is not scale itself that is the object of contention, but specific processes and institutionalised practices that are differentially scaled (MacKinnon 2011).

The difficulty of operationalising a "politics of scale" approach lies in the inadvertent reification of the scales at which one chooses to enter the field. The theoreticians' behest is to avoid this by looking at the politics in order to see the scales, and casting "attention on the mechanisms of scale transformation and transgression through social conflict and struggle" (Swyngedouw 1997:141). With such a framing of the task at hand, one would think that the scales that will be found, after looking at the politics, are likely to be novel and original. And yet, most of the empirical works end up identifying and essentially reifying these scales: body, household, community, local/subnational, national, global (Peck 2002). Peck (2002) discerned that much of the literature on the politics of scale have had a heavy theoretical discussion slant couched in abstraction, and chooses to avoid abstraction by focusing on the specific institutional and political mechanisms through which rescaling occurs. But, without the scales against which to classify the empirical data, politics remain politics: Peck's intentional focus on specific

[134] Molle (2007) identifies three scalar themes of importance to river basin management but struggles to articulate what his empirical findings bide for the scalar discussions.

[135] For instance, Norman (2012) examines the post-colonial construction of space in the Salish Sea, where indigenous tribes separated by political administrative borders formed a new governing body that asserted their collective right as the Salish Nation. She considers this an instance of socially constructing and politically mobilising a counter-border as "scaling up" from "tribe" to "Nation"; and that it demonstrates how a cultural politics of border can inform the discussion on transboundary water management. From her empirical material, it appears that territorialisation and reterritorialisation is a form of scalar politics.

[136] Belina (2009) noted that the first use of the term can be found in the 1990 afterword to Smith's "Uneven Development", which first appeared in 1984.

institutional and political mechanisms through which rescaling occurs was an institutional and political narration, whose significance for the scale debate was not immediately clear. The poststructuralist performative approach has proposed a way forward by arguing that the discursive elements of rescaling rather than its material elements be considered (MacKinnon 2011, Cohen and McCarthy 2014).

Scale-jumping is an extension of the theorisation on the social construction of scale. It was first used by Neil Smith (1992) to describe the organisation of the production and reproduction of daily life and the organisation of resistance towards oppression and exploitation at a higher scale. "Scale[137] can be constructed as means of constraint and exclusion, a means of imposing identity, but a politics of scale can also become a weapon of expansion and inclusion, a means of enlarging identities" (Smith 1992:78). Scale-jumping is a solution to scalar incongruencies, when the scale at which decisions are made is not that at which opposition to these decisions can be organised (Miller 1997). Social conflict and struggle is a form of transgression and challenge to existing power relations, and the resulting transformations of scale, express these changes in the geometry of social power (Swyngedouw 1997). The observation of scale-jumping precedes other scale-derivatives, such as "re-scaling", "scaling up", or "scaling down". All recognise that existing scales can be contested, that "scale-jumping" is not uni-directional or necessarily upwards (Cox 1998), and can happen at several levels simultaneously, horizontally or vertically (Swyngedouw 1997). Specific strategies of scale-jumping include the reframing of local problems at a wider national or international scale, or gaining a new audience through associations with multi-scale networks (Sneddon 2002 cited in Molle 2007:360).

Generally, the social practices behind scale production, re-scaling, or scale-jumping have been understood as social struggles. The empirical basis of this theorisation has involved open social struggle and conflict as driving change processes. An exception could be Paavola's theorisation that conflict resolution does not have to involve an open conflict and can simply be a conflict of interests, whereby resolution is a definition of whose interests are to prevail and to what extent (Paavola 2007:94). In Section 4.3, I described the strategy of what I termed "level-skipping", whereby some actors had "levelled-up" and "levelled-down" the administrative hierarchy to achieve their objectives. This is an analogous usage to "scale-jumping"; and my use of "level" instead of "scale" was intentional because of two fundamental question sof whether the levels in administrative hierarchies amount to "scales", and whether open social struggle is necessary for an act of "jumping" to have occurred. If we consider the objective of this body of literature, which is to understand how solutions are sought and achieved through socio-spatial strategies, then the acts of "level-skipping" are merely skipping levels. Nothing is resolved, they are one-off instances, and there is no dialectical relationship set in motion.

Moreover, much of the theorisation on scale, which covers scale production and re-scaling, or the political construction of scale and scalar structuration, comes from Western scholars (Brenner 2001; Cox 1998; Delaney and Leitner 1997; Marston et al. 2005; Miller 1997; Moore 2008; Swyngedouw 2000). But this dominant Western theorisation on scales has been challenged for its inapplicability to the non-Western context, specifically, the Chinese (Chung 2007, Lin 1999, Ma 2005, Shen 2007, Smart and Lin 2007), because of its different market logic,

[137] The sequence of scales he discusses – body, home, community, urban, regional, national, global – is explicitly open-ended and not hierarchical, but nested.

the rigidity and hierarchy of the Chinese spatial administrative system, and the different dynamics of Chinese central-local relations. For instance, Lin (1999) argues that the Chinese case of spatial restructuring is different from the Western experience because it is "dual-track" in that plan/state and market/non-market coexist, but acknowledges that it would be premature to argue that there are two logics of spatial restructuring, since the operating mechanism of interaction between the central state, local initiative, and global forces may contain certain regularities and commonality deserving of further investigation. But the reformulation of urban space in China, as a transitional economy with contradictory market and state regulation forces[138], has attracted little Western scholarly attention (Chung 2007). Ma (2005), on the other hand, sees the strong hand of the state: "if scaling processes are understood as hierarchically differentiating and (re)ordering geographic spaces that, under capitalism, tend to be affected by market forces, then scale relations in China are much more strongly shaped by the omnipresent state through its administrative apparatus, including the echelon hierarchy of the spatial system" (Ma 2005:495). The Chinese "politics of scale" has also been argued to be different from the Western politics of scale brought about by intense socio-political struggles, since the remaking and redefinition of scalar configurations in China happen through active initiation and cooperation of the central and local states (Shen 2007, Smart and Lin 2007). The localisation initiative in China might have encouraged more localism, but it has not dismantled central state governance, because the legitimacy of power depends on the administrative hierarchy (Chung 2007). Though based on Chinese empirics, the Chinese and Vietnamese political economy and administrative structures share great similarities. The "administrative apparatus, including the echelon hierarchy of the spatial system" observed by Ma has also been observed in the IZ environmental protection regime. Their and my observations point to the limited explanatory power of scale alone in the non-Western context.

Instead, territory (in the physical sense now) continues to be an important supplement since it mediates between scale and actors in the Vietnamese administrative system, because every level of government (national – provincial – district – commune/area) is also matched to a physical area and a state agency (government/ministries – departments – divisions – offices). That administrative units are readjusted, and the number of provinces varies from year to year in Vietnam (Waibel 2010:24) appears to challenge the sanctity of territory and scale in this state administrative system. For instance, the creation of the province of Hau Giang and its sub-provincial institutional happened with one legislative act, and the regularly redrawing of its commune boundaries, challenge the rigidity of the state administration. Hau Giang was also created because Can Tho wanted to become Can Tho *City* as the upgrade from "province" to "provincial city" would increase its entitlements from the state budget: in order to meet the criteria of population density, it dropped the rural districts that are today Hau Giang. In fact, this is also true of the state agencies: the IZMB needs the IZs to exist, and the more IZs it has to manage, the more power it gains vis-à-vis the other state agencies. This shows how "re-scaling" does not result from socio-political struggles but is initiated by the central and local state, and how scalar processes in Vietnam are quite different from the Western context.

[138] For instance, although the Chinese state is often described as a developmental state (for facilitating the development of market forces), it has been opined that this characterisation belies "a polymorphous state (that) displays both contradictory features and processes such as autonomy and clientelism, developmentalism and predation, control and chaos, as well as contradictory outcomes such as rapid economic growth and a general rise in average per capital income against rising income inequalities, uneven geographical development, exploitative working conditions and environmental degradations" (Howell 2006:292)

Additionally, the description of non-governmental actors as "extra-structure" suggests limitations of conceptualising the administrative system as structure. The outreach of international donor or research-profit programmes is restricted by its engagement with the administrative structure, because such organisations only participate with invitation of, and thus within, the structure. Research-profit programmes such as AKIZ are place-based and anchored to a specific environmental management problem that requires them to engage with the immediate administrative structure. The media is similar in that its participation in activities within the administrative structure is on an invitation basis. Even though independent coverage of pollution stories occurs, this potential of the press as an environmental watchdog depends on the civilian residents' awareness of it, which in turns depends on the physical presence, or rather density, of the press. So, even this free-floating agent also needs a form of physical anchoring. These extra-structure actors appear as networks challenging the scale and territory implicit in the administrative structure, but they also need to be place-based to really work. While I might have gone on to include the socio-spatial concept of networks to supplement my description, I thus left it out, seeing as to how my only examples of potential networks were very much bound up with the state administrative system.

Multi-dimensionality of socio-spatiality

I have shown that engaging single socio-spatial dimensions can be advantageous but insufficient for understanding the results from the empirical investigation. The concept of place allowed insights into the socio-political mechanisms of power aggregation and exclusion, but went into territoriality as a mechanism in place-making. The concept of territory then provided little direction because of the definitional element of land or a physical area, which limited its explanatory power in the state agencies' navigation of their overlapping jurisdictional areas, despite the apparent socio-spatiality of such a conflict, which creates spaces of ambiguity facilitating omission and action. I then turned to scale but found the body of work on scalar structuration and the political construction of scale to be of limited explanatory power in the non-Western Vietnamese context, which has less dispersed political power and open social conflicts, and a more rigid state and spatial hierarchy. The multi-dimensionality of this socio-spatial account can be construed in two ways, one negative and one positive. It might appear to stem from conceptual and theoretical indecisiveness at the outset of the research. But it is also the result of letting the data speak, instead of forcing empirical reality into theoretical categories. This work affirms that the issue of environmental protection in IZs, or environmental protection in any other physical area, can be seen through various lens – a place lens, a scale lens, a territorial lens, or a network lens – as it has often been done by other spatial theorists, but the call to socio-spatiality seems best satisfied by a combined lens that does not privilege one perspective over another but considers all the spatial strategies that social actors might have.

This empirical research did not set out to demonstrate how to analyse environmental management problems to find spatial explanations. The research question sought a contextualised answer to the problem of environmental management failure, which would go beyond the usual trio of capacity-financing-regulation. An institutional analysis was applied as inductive research methodology, and it was through the consideration of the larger political-geographical context, the actors, the rules, the physical and material conditions, that the socio-spatial elements of symbolic and place meaning, as well as shifting operational boundaries and levels of government in framing actions

were revealed. By explicating these socio-spatial elements, this analysis of an environmental management problem provided more depth in our comprehension of actors' omissions and actions. This is not an assertion of spatial structure and explanations as causative, but merely a statement that environmental management analyses could benefit from better and deeper contextualisation by delving into the location and its location within larger structures.

5. FUNCTIONS AND SPATIALITY OF LAW IN VIETNAM

Two contradictory themes recurred during the field research: the repeated reference to the law, and the persistent administrative violations of the environmental protection laws. To explore this contradiction between the apparent normative constraints and guidance of the law, and its practical non-adherence, I look to notions of law and legality in Vietnam in Section 5.1. The instrumentalisation of the law by the Vietnamese Communist Party and the blurred lines between its policies and the laws whereby policies have the weight of law would suggest that there is no rule *of* law. But, even rule *by* law presuppose the normative weight of law, hence its instrumentalisation. I thus come to the thesis that legal ambiguity could be a governing technology in Vietnam. Section 5.2 substantiates this argument with a closer reading of the regulations in the legal framework for environmental protection in industrial zones, showing that the ambiguous semantics and terminology allow for an interpretation of ambiguity as deliberate design than legislative oversight. The rationale and philosophy reflected in the contents, which are based on idealised than practical environmental protection, give cause for reconsidering the common recommendation of strengthening the legal framework. Rather than constituting a legal apology for the environmental management failures, Section 5.2 argues that this content analysis reveals that regulations are framed and constructed by the Vietnamese state administrative hierarchy. The function of the law as a mode of spatial organisation surfaces through the comparison of wastewater management inside and outside of industrial zones, which illustrates how law is used to create a new type of place, which then fragments an existing regulation landscape. Section 5.3 then debates the thesis of legal ambiguity as governing technology, before considering the contribution of legal geography to studying Vietnamese society.

5.1 Notions of law and legality in Vietnam

Although Vietnam is a transition economy, its socialist past is still relevant, and the socialist legal canon and its legal principles ground discussions of legality and law in Vietnam (Gillespie 2007). Law can be seen broadly as a social phenomenon, and epithets such as law as social control, law as culture, law as discourse, law as power, and law as process show the various dimensions of social organisation law possesses. The general understanding is that it consists of rules and norms (von Benda-Beckmann 2002:48ff) Although it has been argued that law does not have to be connected to the state, and considering the direct connection to the state as a constitutive element can lead to a tautologous concept of law (von Benda-Beckmann 2002:56), the term as used in this chapter refers to "state law".

In Socialist political-legal thought, the legal systems of worker-controlled societies are to reflect proletarian aspirations ("socialist legality"), and binding the party and the state in organisation would thus avoid departmentalism and regionalism ("democratic centralism"), so that conflict between the state and individuals with the state as manager could be eliminated ("collective mastery") (Gillespie 2005:49). These three doctrines of

socialist political-legal thought are etched in the Vietnamese Constitution[139]. From these three doctrines, four legal principles are derived: law emanates from the state and there is no room for customary law[140], the party and state can substitute policy for law, the party leads the state, and individual legal rights give way to collective public good (Gillespie 2005:49).

Law is "a system of norms that are codified and enforced by the state that *represents the will of the ruling class* and is an *instrument* to adjust social relations" in Vietnam (emphasis mine) (Le Minh Tam 1998b:64 cited in Bui Thi Bich Vien 2005). Because law is used to give effect to party policy, law is used interchangeably with policy (Le Duan 1994 cited in Nicholson 2005:174). This means that party policy can take the form of a legal instrument (Nicholson 2005:167) instead of a policy document, but even if the policy is not in the form of law, party officials are expected to implement both (Sidel 1997 cited in Nicholson 2005:174). This lack of a division between law and policy is attested to by the policy documents passed as resolutions, decisions, and directions, which are considered part of the system of legal documents. Legal education reinforces this: the study of state and law is incomplete without reference to party resolution documents (Bui Thi Bich Vien 2005:144). Thus, "the underlying notion of law is not so much that of an immutable order to which all should now, but rather that of an important element of the way in which the party line is implemented" (Fforde 1986:62). The perception of law as a tool of social regulation is also evinced by the priority given to legal terminology geared at generating social compliance than legal certainty. Neologisms like validity (*hieu luc*), legitimacy (*tinh hop phap*), and legality (*phap che*) were created from everyday Vietnamese to replace Sino-Vietnamese legal terms to make legal terms more familiar to villagers (Gillespie 2005:47f).

Bearing in mind this instrumentality of law for the socialist state, the introduction of a law-based society (*nha nuoc phap quyen*) at the Seventh Party Congress in 1991 (Nicholson and Quan Nguyen 2008) can be seen as a milestone, though not necessarily a turning point. The introduction of the law-based state has not replaced socialist legality as the orthodoxy (Gillespie 2007:150f; Nicholson 2005). Rather than a move towards a thick conception of the rule of law, this move towards the rule of law and constitutionalism has been considered an attempt of the Communist Party of Vietnam to legitimise its rule (Thayer 2010 cited in Thayer 2009a:48). In this way, it can be seen as a continuation and sophisticated form of the instrumentalisation of law. Additionally, the "rule of law" is rhetorically and discursively powerful, and the equivocation between the thick and thin conceptions thus allows different factions in Vietnam to use it to push their agendas (Peerenboom 2004:16). Vietnam's desire for foreign aid also requires it to be receptive to legal reform since donor agencies' programmes promote the rule of law (Peerenboom 2004:15). Thus, although the meaning of law as instrument has not fundamentally changed (Bui Thi Bich Vien 2005:154), legal reform is in full gear.

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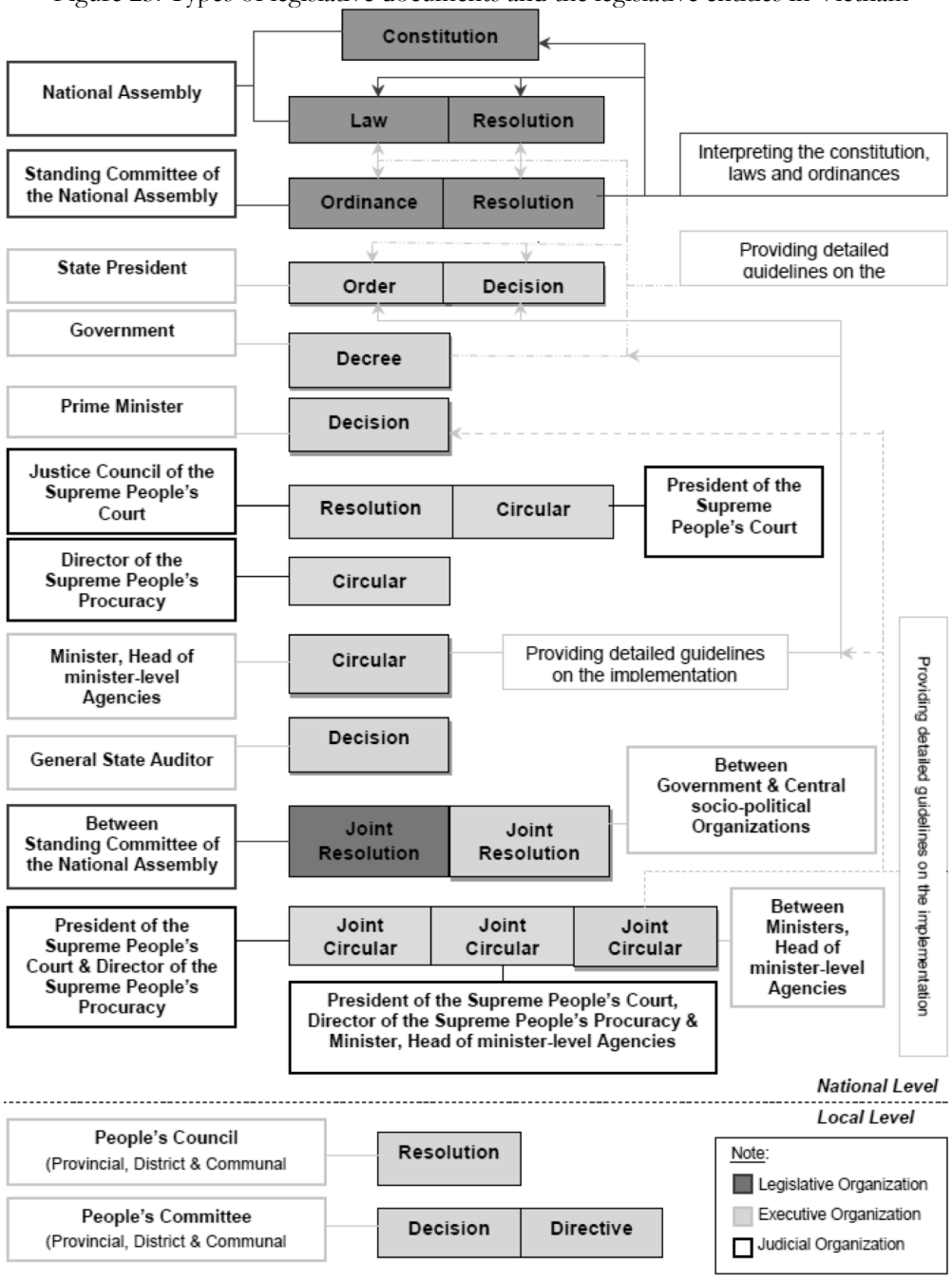
[139] Article 12 of the Constitution states that the state exercises the administration of society by means of the law and shall unceasingly strengthen socialist legality. Article 6 of the Constitution states that democratic centralism is the principle governing the organisation and activity of the National Assembly, the People's Councils, and all other state organs. And Article 11 of the Constitution states that the citizen exercises his right to mastery at the grassroots by participating in state and social affairs: he is duty bound to help protect public property, legitimate civic rights and interests, maintain national security and social order and organise public life.

[140] That law can only come from the state denies a legal pluralist view of multiple sources of normativism (von Benda-Beckmann 2002)

The implications of this agenda of legal reform are various. Substantively, legal reform tends to be more about technical legality and reactive measures than proactive measures to promote principles of good public administrative (Buhmann 2007:252). Practically, the speed and frequency of change in laws and regulations from different sources has led to inconsistency, contradictions, and ambiguity in law (Nguyen Thi Phuong Loan 2010a), and resulted in a condition of bureaucratic discretion (Tenev et al. 2003:19) in interpreting and applying the law. This is also caused by the peculiarities of the Vietnamese legislative model; Figure 23 ("Types of legislative documents and the legislative entities in Vietnam") shows how laws in Vietnam are framework documents passed by the National Assembly, and it is for the Government – comprising the Prime Minister, ministries, ministerial agencies, and local governments – to implement and execute them with more details in "sub-laws", comprising decrees, decisions and circulars. Unfortunately, implementing guidelines come after considerable delay (Nguyen Thi Phuong Loan 2013), and local state agencies prefer to wait it out and not apply the passed law until there are implementation guidelines or until the overlaps have been clarified (Tenev et al. 2003:19). This peculiarity provides a different angle to understanding legal "non-compliance" in Vietnam. It is conceivable that, from the perspective of a local state official, omission is not legal non-compliance. There is something (a decree) but also nothing (like a circular) to implement. What is unclear also cannot be implemented.

In this sense, law in Vietnam can be "unimplementable". Adam Fforde first coined the term "unimplementability" to describe how the Vietnamese socialist revolution is similar to the Western notion of "development", because it encompasses a wide conception of social change that eludes a means-ends definition by the Party, and is by its nature not implementable (Fforde 1986). My use of his term "unimplementability" is more consistent with Waibel et al's (2012) observation that the gap between policy and actual practice can be better explained by the structural features of the Vietnamese state than the characterisation of capacity issues. The central government is strong and weak simultaneously. It has a rigidly organised hierarchy but lacks control over lower administrative levels. "The emperor's law stops at the village gate" is a popular and often repeated idiom that captures the tension in central-local relations, and some scholars have gone so far as to describe the provinces as independent kingdoms that only allude to central decisions when it comes to protecting their particularistic interests (Beresford 1995:10; Thayer 1995:55 cited in Waibel et al 2012:175). The nature and enterprise of law-making is another aspect of central-local relations: the frequency of legislative change and the necessity of implementing sub-laws requires the state agencies or the local state to engage with the policies of the central government, and until this engagement happens, the law is "unimplementable", and omission is the default condition.

Figure 23: Types of legislative documents and the legislative entities in Vietnam



Source: (Nguyen Thi Phuong Loan 2010a:8)

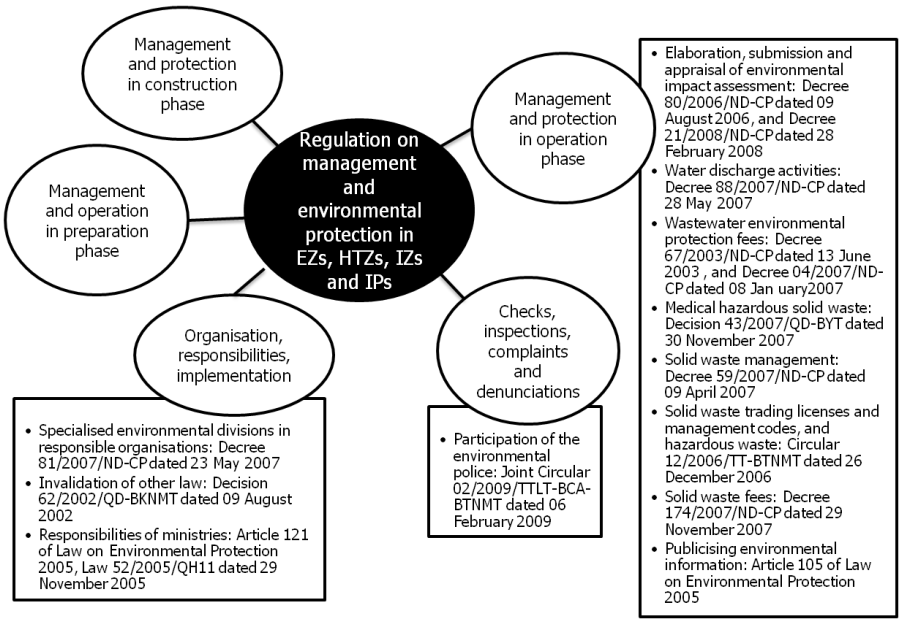
This interpretation requires us to put aside the conventional understanding of rule of law for the Vietnam case. Although the instrumentalisation of law for Party policy and adoption of the doctrine of a law-based state suggests that law does have normative weight, on the whole, law is more of an instrument than an ideology. Instead of providing certainty, the law is rather volatile in that it is prone to frequent amendments. Instead of providing norms for acting, the normativity of law is contingent on state agencies' provision of details in the form of sub-laws like decisions, circulars, and joint circulars. The duration of the process of producing legal normative or regulatory certainty condones rather than penalises omission. This is borne out by the following analysis of the state of regulation and the contents of regulations on environmental protection in industrial zones, which shows indefinite terminology, a system of dual responsibility, and the requirement of coordination. This legal ambiguity supports this interpretation of a condition of unimplementability.

5.2 Legal ambiguity as designed

5.2.1 Semantics of responsibility in the regulations

There are three legislative documents that deal with environmental protection in industrial zones. Decision 62/2002/QD-BKHCNMT[141] was issued by the Ministry of Science, Technology and Environment (MoSTE) in 2002. The following year, MoSTE was reorganised[142] and succeeded by the Ministry of Science and Technology (MoST), and the new MoNRE assumed the functions related to the environment. Thus, in 2009, MoNRE issued its own Circular 08/2009/TT-BTNMT[143] on "regulations on management and environmental protection in economic zones, high-tech zones, industrial zones and industrial parks". A period of increased reporting in the Vietnamese media on industrial pollution from the industrial zones then saw the 13th National Congress debating environmental protection in economic zones and craft villages, two extreme scales of industrial clusters, in November 2011. In December 2011, MoNRE passed a new Circular 48/2011/TT-BTNMT[144] that amended and supplemented the previous Circular 08.

Figure 24: The regulation on management and environmental protection in industrial zones as a patchwork document



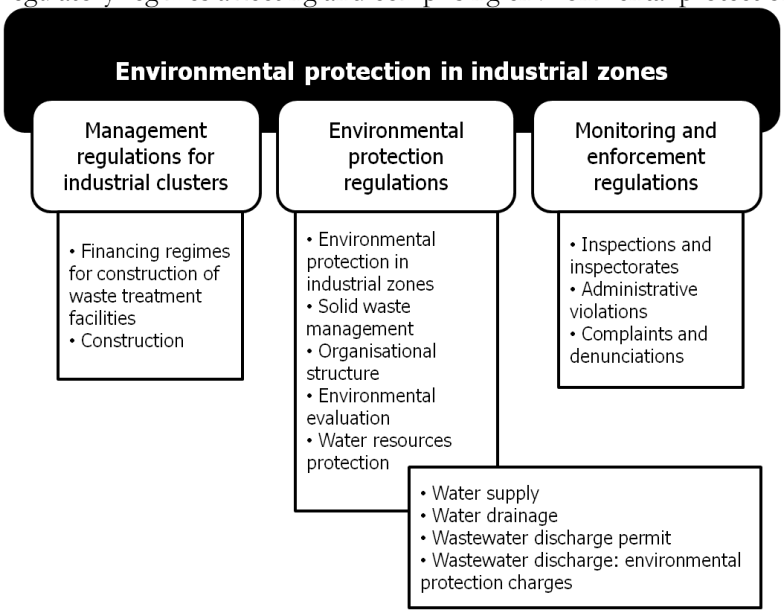
Circular 08/2009/TT-BTNMT from MoNRE breaks down environmental protection in industrial zones into five phases or themes, and directly refers to 14 other legislative documents in elaborating the environmental protection obligations within industrial zones, high-tech zones, economic zones and industrial parks.

This frequency of legislative action hints at the challenges faced in implementing environmental protection in industrial zones. Clarification is needed and provided by cross-referencing. Figure 24 ("The regulation on

[141] Decision 62/2002/QD-BKHCNMT dated 09.08.2002 issued by the MoSTE on "Decision promulgating regulations on the environmental protection in industrial zones.
[142] Pursuant to Decree 54/2003/ND-CP dated 19.05.2003 issued by the National Assembly.
[143] Circular 08/2009/TT-BTNMT dated 15.07.2009 issued by the MoNRE "providing for the environmental management and protection of economic zones, hi-tech parks, industrial parks, and industrial complex"
[144] Circular 48/2011/TT-BTNMT dated 28.12.2011 issued by the MoNRE on "amending and supplementing some articles of Circular 08/2009/TT-BTNMT dated 15.07.2009 on management and environmental protection in economic zones, hi-tech parks, industrial parks and industrial clusters"

environmental protection in industrial zones as patchwork legislation") shows the 14 other legislative documents that the main legislative document directly refers to in defining the environmental protection regime in IZs. This patchwork and supplementary nature of the regulation has been confirmed in interviews, where state agency officials referred to complex procedures of coordination between various agencies and more regulatory regimes and procedures than those already listed in Circular 08. Figure 25 ("Different regulatory regimes affecting and comprising environmental protection in industrial zones") shows what these additional regulatory regimes that affect effective wastewater management in IZs are. For instance, construction regulations matter as well because construction permits for an IZ should only be given if an EIA had been performed and proper water drainage had been planned for. Financing regimes for construction of infrastructure also matter, because not all IZs qualify for funds from the central budget for the construction of CWWTPs.

Figure 25: Different regulatory regimes affecting and comprising environmental protection in industrial zones



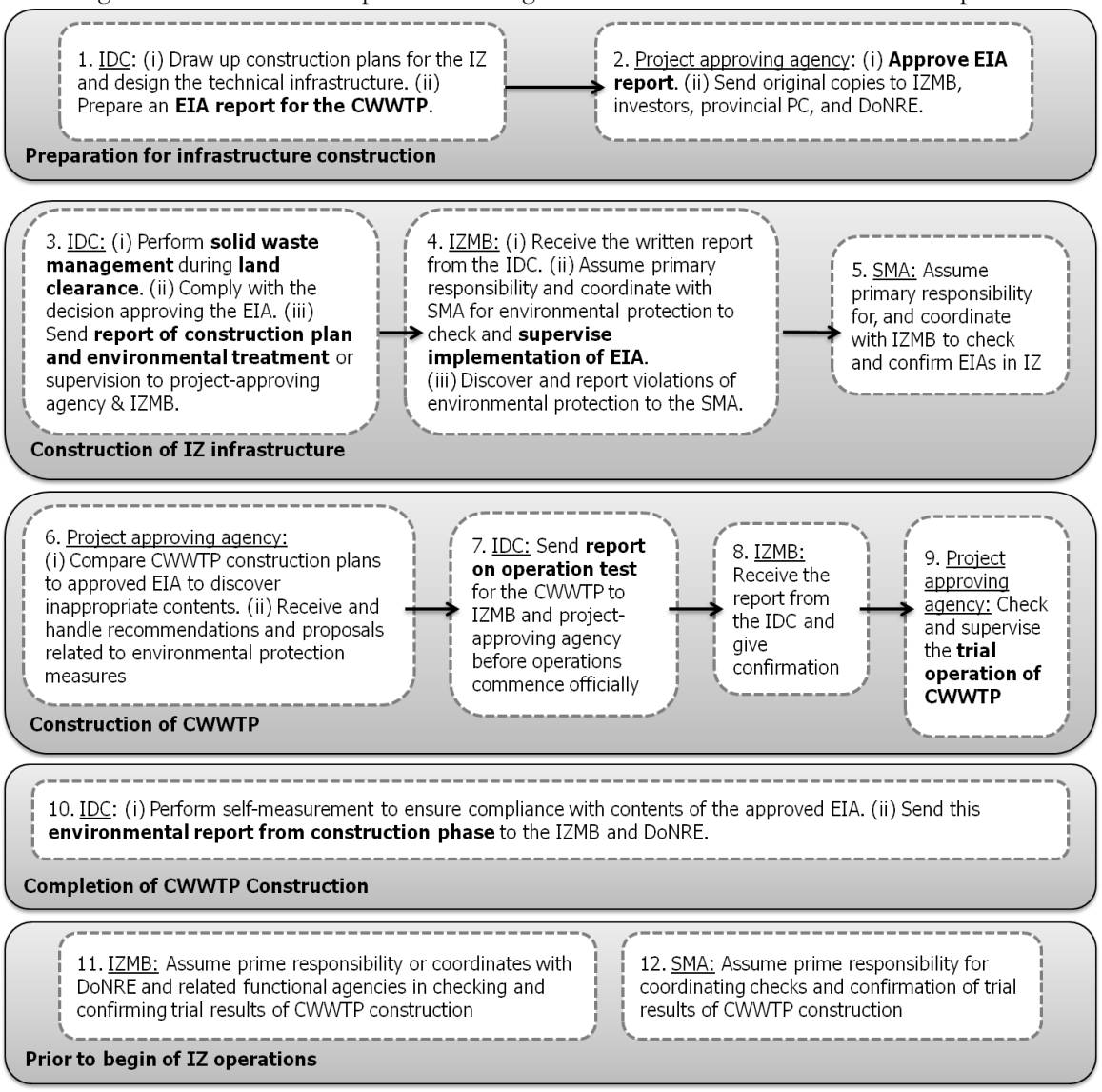
Although three legal documents directly provide for environmental protection in industrial zones, interviewee accounts revealed that a variety of regulatory frameworks are involved in disambiguating the details of environmental protection, such as management of industrial zones, environmental protection in general, and monitoring and enforcement.

The resolution of these overlaps between monitoring and enforcement regulations and IZ management rules also plays a pivotal role: inspections happen only biannually, since five or more different organisations with varying powers and tasks have to be coordinated, and procedural irregularities can render detections invalid. The net of rules and actors affecting effective environmental protection is wide: IZ management structures, general environmental protection regulations, existing environmental monitoring and enforcement arrangements, state budgetary matters, as well as financing regimes and possibilities. When these other regulatory regimes shown in Figure 24 ("The regulation on environmental protection in industrial zones as patchwork legislation") and Figure 25 ("Different regulatory regimes affecting and comprising environmental protection in industrial zones") are considered, at least 68 other legislative documents matter and have been documented in Annex 8 ("List of legislative documents that impact on or regulate aspects of environmental protection in industrial clusters"). This characteristic cross-referencing is reflected in the semantics of the legislative documents.

The content of the regulations are characterised by varying terminology for responsible actors and their responsibilities, and constant calls to coordination, the extent and nature of which ultimately remains undefined.

What each actor is to do is hard to ascertain because they are not named specifically, but referred to as "state management agencies", "functional agencies", and "competent agencies". None of these terms were specifically defined, and the differences between then are unclear. Additionally, the regulation admits degrees of responsibility ranging from "being responsible", "assume primary responsibility", to "assuming prime responsibility", and from naming no agency to naming two agencies for the same task. Coordination is central to the entire machinery: the word appears 18 times in the 16 articles that deal with responsibility apportionment. These characteristics of the regulation raise the question of whether they are mere legislative and drafting oversight or deliberate design. This is not a theoretical curiosity, since the answer to this question would throw new light on the standard recommendation to improve the legal framework.

Figure 26: Environmental protection obligations in industrial zones: construction phase



Based on Circular 08/2009/TT-BTNMT issued by the Ministry of Natural Resources and the Environment dated 15.07.2009, on Regulations on management and environmental protection in economic zones, high-tech zones, industrial zones and industrial parks.

The imprecise terminology is obvious in regulation regarding the construction phase of the IZ. Figure 26 ("Environmental protection obligations in industrial zones: construction phase") shows who is to do what. References to the "project approving agency" alongside the "state management agency" with regard to activities

in one procedural step leave it open as to whether the two are one and same or different entities. Since the project approving agency (Box 2 of Figure 26) approves the EIA, it would seem consistent that it would be the one to confirm its implementation, but it is the "state management agency" (Box 5 of Figure 26) that has been named to coordinate with the IZMB to check and confirm the EIAs in the IZ during the construction of IZ infrastructure (see Boxes 2, 3 and 5 in Figure 26). When the WWTP is being constructed, the infrastructure developer's operation test report is to be sent to the *project-approving agency* (Box 7), but when the WWTP has been constructed, the infrastructure developer's environmental report from the construction phase is to be sent to *DoNRE* (Box 10). Similarly, the project approving agency ought to supervise the trial operation of the WWTP (Box 9), but it is the *state management agency* that assumes responsibility for confirming the trial results of CWWTP construction (Box 12). Finally, the IZMB is expected to coordinate with DoNRE and "related functional agencies" in checking the trial results of the WWTP prior to beginning IZ operations (Box 11), but the state management agency is also expected to coordinate checks for the confirmation of the trial results (Box 12). Hence, the question of who "state management agency" actually refers to is not any clearer even after breaking down the legislative document to a flowchart. It appears that the "state management agency" refers to DoNRE broadly, even though the only department in DoNRE practically involved is its EPA, while "project approving agency" is a more specific body. Interviews in the field show that the "project-approving agency" is the EPA of the DoNRE, but this only raises the question of why it was not or could not be expressly named, when the Circular was passed in 2009, years after the operational mandates of the bodies in the new MoNRE have been established.

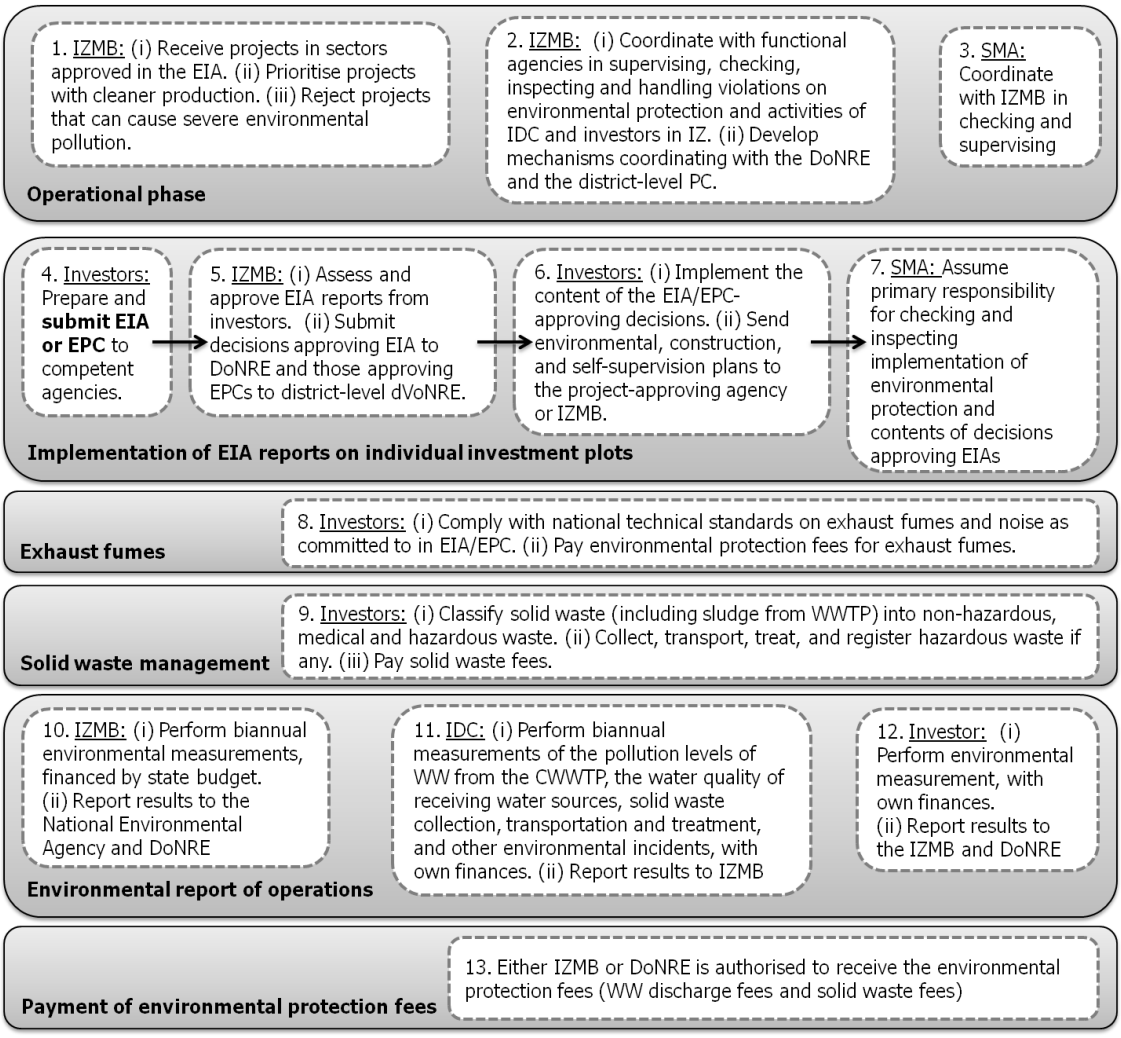
The semantics of "responsibility" are also unusual. Two agencies, instead of merely one, are often named as being responsible for one task. Both the IZMB and the state management agency are to "assume primary responsibility" for coordinating with each other to check and confirm the EIA (Boxes 4 and 5 in Figure 26). Similarly, the two are to "assume prime responsibility" for coordinating checks to confirm the trial results of CWWTP construction (Boxes 11 and 12 in Figure 26). Since the IZMB is the agency responsible for the industrial zone, and the state management authority is the agency responsible for environmental protection, environmental protection in IZs is the area where their jurisdictions overlap. This would suggest that "dual primary" responsibility is intentionally designed to preserve equal standing amongst the two agencies. This tension and attempt to balance both agencies is also apparent during the operational phase and within the ambit of preventive and participatory environmental protection activities.

During the operational phase of the IZ, both the IZMB and the state management agency are to "coordinate" in checking, supervising, inspecting and handling violations on environmental protection in the IZ (See Figure 27 Environmental protection obligations in industrial zones: operational phase. particularly Boxes 2 and 3), and both are also authorised to receive the environmental protection fees for wastewater discharge and solid wastes (Box 13 in Figure 27). Interviews show the problem with the legislation-prescribed solution of coordination: both the IZMB and the DoNRE were uncertain about who the infrastructure developer and investors should be paying environmental protection fees to. Of the twelve provinces visited, only Tien Giang had managed to deal with the issue[145] of requiring the payment of environmental protection fees (*Interview: EPA, Tien Giang, 08.07.11*). None of the other 11 collected environmental protection fees from the investors-factories in the IZs. The prescribed

[145] The Tien Giang EPA wrote to the MoNRE for a clarification on this issue.

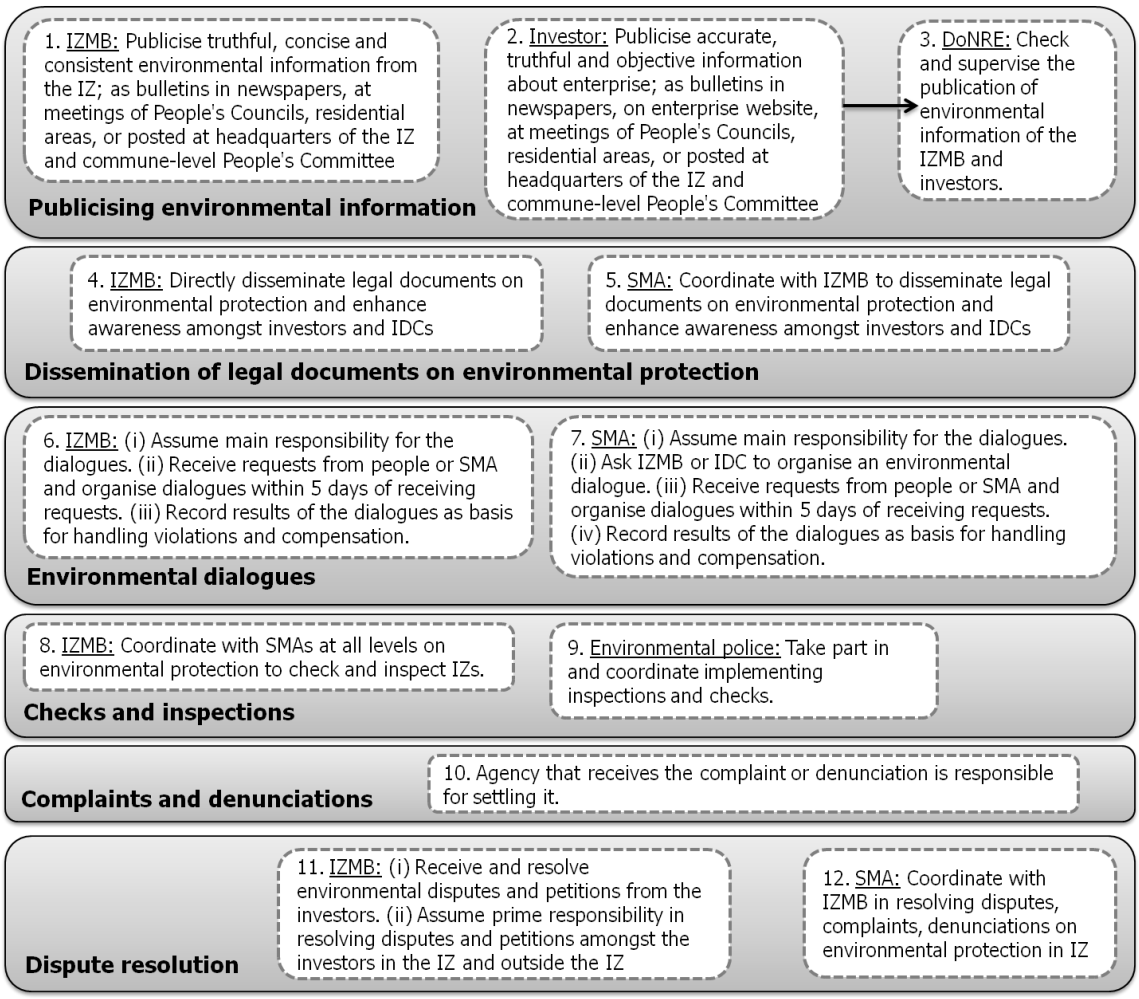
coordination appears to have led to processes that price procedure over environmental protection. For one, the number of agencies which have to be present at a biannual inspection is an obstacle to effective monitoring (*Interviews: Soc Trang DonRE, 28.06.11, Tien Giang DoNRE, 08.07.11, Can Tho DoNRE 22.06.11, Long An DoNRE 21.07.11*) and also means that the inspection is not so much about uncovering violations of environmental protection, but ensuring that all the agencies mandated with environmental protection are present at the inspection for procedural correctness (*Personal communication: Member of An Giang DoNRE EPA, 07.12.11*). Also, interviewees explained that if the regulation was unclear about attribution of responsibilities, they would write to the Ministry that issued the regulation to seek clarification, stalling further action till the issue was cleared (*Interview: Tien Giang EPA, 08.07.11*). Regardless of whether this system of dual responsibility is designed, the practical implication of a dual-responsibility arrangement is the encumbrance of effective environmental protection.

Figure 27: Environmental protection obligations in industrial zones: operational phase



Based on Circular 08/2009/TT-BTNMT issued by the Ministry of Natural Resources and the Environment dated 15.07.2009, on Regulations on management and environmental protection in economic zones, high-tech zones, industrial zones and industrial parks.

Figure 28: Environmental protection obligations in industrial zones: preventive and participatory activities



Based on Circular 08/2009/TT-BTNMT issued by the Ministry of Natural Resources and the Environment dated 15.07.2009, on Regulations on management and environmental protection in economic zones, high-tech zones, industrial zones and industrial parks.

The preventive and participatory activities are also marked by coordination between the IZMB and the "state management agency" (see Figure 28: Environmental protection obligations in industrial zones: preventive and participatory activities). Both are required to coordinate in various preventive or participatory environmental protection activities, such as the dissemination of legal documents on environmental protection, the enhancement of awareness amongst investors and infrastructure developers (Boxes 4 and 5 in Figure 28), and the organisation of environmental dialogues (Boxes 6 and 7 in Figure 28). But interviews with IZMBs and DoNREs in the Mekong Delta provinces show that neither the IZMBs nor the DoNREs have initiated or participated in these activities. There are several ways to interpret this omission and its causes: it could be a consequence of no state agency being directly charged with the responsibility, or that no state agency has been charged with ensuring execution, or the previously observed general lack of environmental awareness, and cultural constraints to participation (Clausen et al. 2011; Hostovsky et al. 2010).

Half of the articles in Circular 08/2009 deal with apportionment of responsibility, and yet, it remains unclear in many situations which agency would be responsible for taking action. This analysis thus confers with earlier studies, which noted that vagueness in language, illogical statements, uncertainty and the use of different terminology to describe what seems to be the same procedure, certificate or mechanism in Vietnamese environmental control

legislation is such that the degree of detail is either insufficient, or so great that it makes procedures rather confusing and bureaucratic (Bryant and Akers 1999; Nguyen Thi Phuong Loan 2012). But the implementation and practice examples provided above and in the previous Chapter also suggest that the ensuing legal ambiguity might not so much be due to oversight and weak capacity in the legislative body, but rather through an element of design. The recurrent features – (i) the naming of two agencies as being charged with the assumption of primary or prime responsibility for the same task, (ii) the interchangeable use of non-specific terms with specific agencies, and (iii) the prominence of coordination between agencies – create a situation where "everybody is in charge, but no one is responsible" (Waibel et al. 2012:174).

5.2.2 Form over substance in environmental protection

Going beyond the text to its underlying philosophy and rationale also shows a preference for form over substance. First, the regulation professes to prevention being key, but overwhelmingly focuses on its procedural aspects. There are several articles on the performance of an EIA, which is in line with the initial statement of "prevention being a major activity in all phases"[146]. Unfortunately, interviews revealed the opposite. EIAs are performed as procedural requirements, and following up on EIA reports or their approving decisions does not occur as planned in the legislation[147]. This is a known problem: EIA appraisal panels do not appraise but merely approve EIA reports because of their conflict of interest (VietNam Net Bridge, 01.12.12). Once approved, these EIA reports can be and are filed away (Viet Nam News 08.10.11): in a high-profile pollution case involving a Taiwanese company in Ho Chi Minh City, the environmental police requested the company to present its EIA, but it had apparently lost the original, and the local DoNRE couldn't locate its copy either (The Saigon Times Weekly 01.10.11). In reality then, prevention is a procedural than substantive requirement, and this is quite the opposite of the explicitly-stated legislative aim. Monitoring and enforcement is in turn encumbered by requirements for procedural correctness[148]. As an interviewee from an IZMB environmental division opined, "As someone trained in environmental technology, the biggest challenge for me is that the management focuses on law and policy instead of the environment." (*Interview: Can Tho IZMB, Can Tho City, 17.07.11*)

Second, the regulation is fixed on environmental protection through state management activities. Despite their centrality to the production and reduction of pollution, the participation of the infrastructure developer and the individual investors in environmental protection is limited to the submission of self-monitoring reports[149], and is hence ineffective in the case of real and illegal pollution. Other attempts to involve the pollution producers are outreach programmes on environmental education which depend on the voluntary participation of companies and agenda or budget of the EPA, and generally did not perform well (*Interview: Can Tho EPA, Can Tho, 22.06.11; Interview: Vietnam Chamber for Commerce and Industry, Can Tho, 14.09.11*). Complaints and denunciations are an important supplement to state management, and plug the gap in surveillance between the two official inspections. But Circular 08/2009 with its 36 articles deals with it in merely one article, and contradictorily. At one spot, it is

[146] Article 3(2) of Circular 08/2009/TT-BTNMT states: "The environmental protection of economic zones, high-tech parks, industrial parks and industrial complexes shall be carried out regularly with prevention as a major step at all stages..."
[147] See Section 2.2 and Section 4.3 which discuss the wastewater pollution situation.
[148] See Section 4.3
[149] Only eight out of 18 activites depicted in Figure 26 to Figure 28 explicitly state obligations of the investor or IDC.

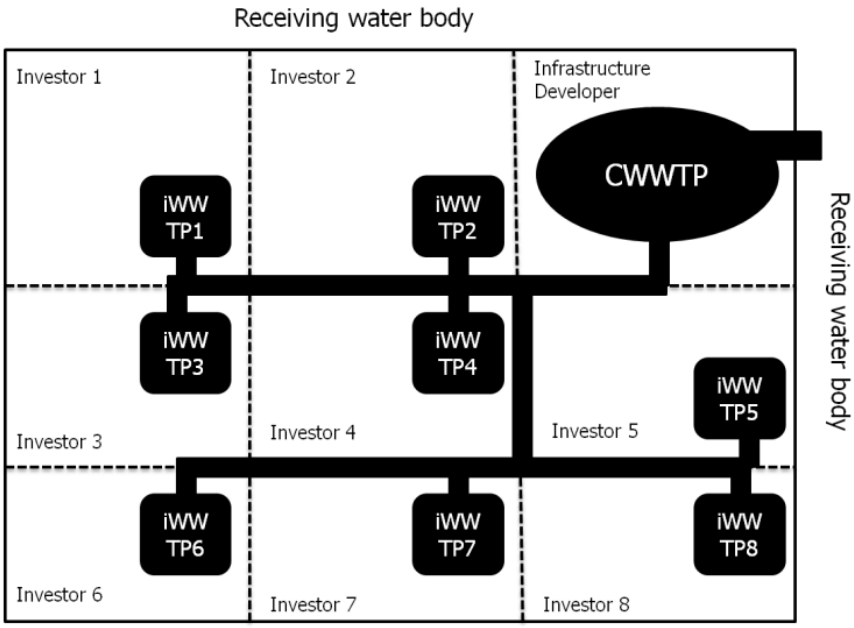
stated that the agency that receives the complaint is responsible for solving it (Art. 33; Box 10 of Figure 28: Environmental protection obligations in IZs: preventive and participatory activities), but elsewhere the IZMB is clearly contemplated as the agency responsible: it is to "assume prime responsibility" and "coordinate with functional agencies" in resolving disputes inside...and outside (IZs)" (Box 11 in Figure 28). In practice, the IZMBs do not seem to be bothered by complaints.

Third, the management exercised by the IZMB, and the privatisation of infrastructure development including that of wastewater management in industrial zones, are the keystones of the regulation. The reality of wastewater management in the IZs in the Mekong Delta reveals this to be an idealised arrangement that has failed to account for the reality of market uncertainties and conflicts of interest. The requirement of privatisation of infrastructure development has seen the establishment of paradoxical "public non-business units with revenue sources" (*Đon vi su nghiep*) (PUBUs) by IZMBs in the Mekong Delta. PUBUs are set up by the provincial governments[150] and funded by public capital for public "non-business" purposes, except they ought to be run like businesses and eventually generate profit. In other words, these non-business units fail to fulfil the purpose of utilising private funds, but are set up to meet the legal requirement of outsourcing infrastructure development to private hands. This defeats the purpose and assumption underlying privatisation of environmental management functions, which is that of the effectiveness of the commercial and private cost-benefit calculus. They are also run by double-hatting IZMB directors (*Interview: Hau Giang IZMB, 08.11.11; Interview: IDC of An Nghiep IZ, Soc Trang, 01.11.11; Interview: An Giang IZMB Environmental division, 08.12.11*), which renders it practically impossible for the IZMB to hold the infrastructure developers accountable for the outsourced and failed environmental management, since the IZMB and non-business infrastructure developer are essentially one though not legally so. Furthermore, the IZMBs are conflicted and compelled to relax operating requirements – and this includes wastewater treatment – for potential investors, in order to fulfil their mandate of establishing and managing IZs. The environmental management model contemplated by Circular 08/2009 failed in the Mekong Delta by assuming and requiring a competitive market, and failing to avoid the conflicts of interests in its absence.

Fourth, the regulations seek to establish a simplified harmonised system, where environmental management in every IZ in the country is run according to the same model and the same logic. Figure 29 ("Wastewater management in industrial zones as envisaged by law") depicts the idealised wastewater management system, a core aspect of environmental management in IZs. Circular 08/2009 essentially foresees this one model being replicated in all 115 IZs to be established by 2015, regardless of industrial production and wastewater profiles. In its implementation, this "idealised" situation and regulation becomes a matter of form than substance, where the state agencies seek to fulfil their "power, responsibilities, tasks and obligations" as is defined, even when the underlying rationale behind the rules would be thwarted, as shown by the case of the non-business units run by the management using public (rather than private) funds to build the CWWTPs.

[150] In all the IZs studied in An Giang, Hau Giang, Can Tho City, and Soc Trang, the infrastructure developers operating infrastructure development in IZs are all PUBUs. See Section 4.1.2 for more information on the public non-business units.

Figure 29: Wastewater management in all industrial zones as envisaged by law



The individual investors are to construct individual wastewater treatment plants (iWWTP), and send their pre-treated wastewater via the sewer system (bold black lines) in the industrial zone to the centralised wastewater treatment plant (CWWTP), where the wastewater produced in the entire industrial zone is treated prior to discharge into the receiving water body. There is only one discharge point for the entire industrial zone. This is the one and only wastewater management system that the legal regulation has conceived of and allows. Chapter 2 on Tra Noc industrial zone provides an example of what this looks like in implementation in Figure 13.

That environmental management in IZs is idealised than realistic is further substantiated by the lack of obvious difference in the succeeding regulation Circular 48/2011/TT-BTNMT, which tries to retrospectively legislate for and legitimise various situations where the wastewater management system set up has deviated from the idealised standard in Circular 08/2009/TT-BTNMT as shown in Figure 29 ("Wastewater management in all industrial zones as envisaged by law"), as for instance, in Soc Trang. In certain IZs, the model in Figure 29 has proven economically inefficient because different investors have different financial capacities (*Interview: Can Tho IZMB, Can Tho, 17.07.11*). Some investors are able to build sophisticated individual WWTPs, while others fail to even build one. The former see no reason to pay wastewater treatment fees to the infrastructure developer, and indeed, mixing the wastewater from both would increase operation costs for the infrastructure developer's CWWTP (*Personal communication: Personnel, Can Tho IDC, Can Tho City, 08.09.11*). This situation has been captured in Circular 48/2011/TT-BTNMT, where legal exceptions have been made for two possible situations: IZs where there are no iWWTPs but at least a CWWTP, and IZs where there are only some iWWTPs and the rest of the investors have to rely on the CWWTP. Here, the Ministry accommodates outlier cases, without having learnt from their successful existence that the current mode of regulation is idealised and had led to these alternative, and successful, arrangements. The idealised and idealistic design of Circular 08/2009 and the subsequent remedial efforts in Circular 48/2011 cast doubt on the view that legislation and a strong legal framework are solutions, and also shows legislation to be reactive and concerned with legitimising previous "violations" arising out of legislative oversight.

5.2.3 Legal ambiguity as governing technology

The analysis of the semantics and content of the regulations on environmental protection in IZs in this Section 5.2 supports the thesis of a condition of "unimplementability" presented in Section 5.1. The peculiarities of the Vietnamese law-making system are such that laws are merely frameworks and must be elaborated with sub-laws by state agencies; the delay in this act of elaboration and the overlaps in the elaborating documents condone omission on the part of the implementing agencies, such that implementation failure by the agencies is both correct and inaccurate as a description of the implementation situation. The semantics of responsibility – where the constant calls to coordination means "everybody is in charge, but no one is responsible" (Waibel et al. 2012:174) in case of failure – is an extension of this philosophy, because it causes omission to be the default condition. It is difficult to assert that the state agencies have failed to implement the law where there is uncertainty about what the law is to begin with. Legal ambiguity in semantics thus expresses and serves the condition of unimplementability.

The rationale of the regulations also provides another perspective on legal ambiguity. To the extent that the idealised wastewater management situation is heavily reliant on the state agencies for its realisation, unambiguously defined obligations to act could backfire by further restricting the local authorities' ability to adapt to situations unforeseen by law, or perhaps even prejudice their image when they fail to implement as prescribed. For instance, the frequency of self-reporting obligations is not set in Circular 08/2009; perhaps this allows the province and the "competent agency" to decide for itself depending on its own capacity. The observed coexistence of, strictly speaking, implementation failure, and the ritualistic references to the law and the bureaucratic stress on regulatory documents would suggest that the law is a resource in justifying inaction pending coordination. Thus, legal ambiguity can also be seen as buffering the effects of idealisation in the regulations.

This interpretation of intentional policy ambiguity finds support in the literature on implementation and public administration. The terminology of implementation conjures up a picture of clear, consistent, and stable policy directives waiting to be executed, and the very discourse of implementation problems attributes the fault for the discrepancy between adopted policy and implemented policy to the bureaucracy and its organisational issues (Baier et al 1986). However, if we accept that bureaucracies are "limited instrumentalities", then implementation problems are actually policy-making problems, such as unspecific objectives, inadequate resources, missing administrative organisation (Baier et al 1986:203). But even this conception of policy assumes coherence in policy objectives, which is contradicted by our knowledge of the different interests and bargaining process inherent to policy-making that encourages elected politicians to indicate and follow a less precise policy preference (Alesina and Cukierman 1987). Yet, ambiguity has a legislative purpose: by supporting multiple inconsistent interpretations, it allows legislators to reach a compromise. Ambiguous statutory language also allows for the exercise of discretion and the avoidance of unripe yet critical issues by those interpreting it. But, formal legal doctrine sees ambiguity as a problem rather than an opportunity (Grundfest and Pritchard 2002). The misunderstanding and uncertainty that follows ambiguity in policy goals[151], and its implication for policy success, is emphasised over the dysfunctional effects of

[151] The other aspect of ambiguity with regard to policy implementation is that of ambiguity of means, which might take the form of uncertainty about the roles of different organisations involved in implementation, or when the technology needed to reach the policy objectives do not exist (Matland 1995).

clarity (Matland 1995:157). This body of literature thus provides an important alternative perspective, missing in the literature on environmental management, on implementation problems by tracing it to policy ambiguity rather than bureaucratic incompetence. It presents policy ambiguity as an enabling first step[152], since the policy makers might not have even adopted the policy but for the ambiguity. In that sense, ambiguity and the room it offers for interpretation is preferable to legislative non-action.

Hence, I contend that legal ambiguity is a governing technology[153], a Vietnamese way of doing. While legal ambiguity is typically perceived as legislative oversight and weak capacity, my analysis proposes an alternative view of legal ambiguity as a resource in the Vietnamese condition of unimplementability. This is not incompatible with previous observations that rule ambiguity and uncertainty facilitates the informal character of the Vietnamese economy. To see ambiguity by design requires the casting away of the traditional lens of equating arbitrariness with state weakness, and the orthodox understanding of the function of law as providing certainty. Gainsborough argues that arbitrariness and the fluidity of distinctions between legal and illegal, public and private, are not necessarily indications of state weakness but constitute a mode of governing in themselves (Hibou 1999:13 cited in Gainsborough 2005). Painter's (2003a) description of the multilayered Vietnamese state management system as a system of "polycentric power sharing" of semi-independent bodies loosely connected to a weak centre also supports this interpretation, since legal ambiguity is a resource for some organisations to simply take charge[154] and for others to justify their non-action.

How do the condition of unimplementability and legal ambiguity as a governing technology affect how wastewater is managed in the industrial zones? By default, omission and no responsibility apportionment happen. Until there are implementing guidelines, the involved state agencies do not act. But even when there are implementing guidelines, environmental protection monitoring is about managing coordination. In avoiding a typical legal perspective, this analysis of the regulations inevitably looks like a socio-legal apology for environmental protection failure in the IZs. But there is another aspect. In Chapter 3, I showed how the regulations created the IZ as a place. In Chapter 4, the effect of the administrative apparatus on monitoring and enforcement was demonstrated. These point to the socio-spatial effects of law, and how the regulations are framed by and constructed on Vietnamese political-spatial peculiarities.

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[152] The authors acknowledge that policy ambiguity also has its negative sides, that it affects implementation by influencing the ability of superiors to monitor activities, the likelihood of uniform comprehension and variation of relevant actors across the sites of implementation, and the probability of local contextual factors playing a role (Matland 1995:159). Additionally, the ambiguity might be harnessed disadvantageously. Fischhendler (2008) studied the use of ambiguity in a treaty on transboundary water resources, and questioned the typical characterisation of ambiguity as constructive, because the weaker party had harnessed the ambiguities to its advantage during implementation.

[153] I borrow the term "governing technology" from Bulkeley et al (2007), who use the term "technologies of governing" in a completely different context of elaborating their "modes of governing" analytical framework, which built on literature on governance and governmentality. The framework sought to engage with structures and processes of governing, and the plurality of governing sites and activities.

[154] See Section 4.3.3 for the example of Soc Trang's infrastructure developer.

5.3 More than rules: law as mode of spatial organisation

5.3.1 The legal artefact of the Vietnamese administrative hierarchy

The Vietnamese state administration apparatus is a legal artefact. The Constitution of 1992 set out that

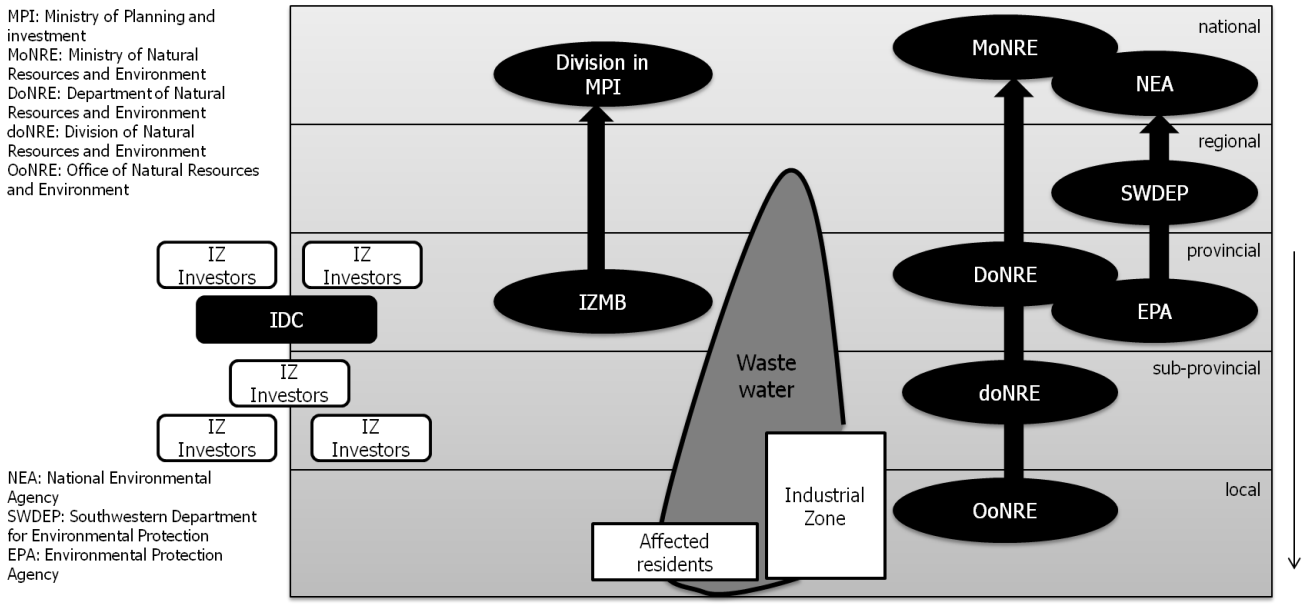
> "The administrative units of the Socialist Republic of Vietnam are distributed as follows: the country is divided into provinces and cities under direct central rule; the province is divided into districts, provincial cities, and towns; the city under direct central rule is divided into urban districts, rural districts, and towns; the district is divided into communes and townlets; the provincial city and the town are divided into wards and communes; the urban district is divided into wards. The establishment of People's Councils and People's Committees in administrative units is determined by law." (Article 118, the Vietnamese Constitution)

The executive branch of the Vietnamese government is explicitly organised to coincide with the administrative-geographical hierarchy (see also Figure 3: The Vietnamese political system based on its constitution, in Chapter 1), such that the same set of functional actors exists at each administrative layer, and the horizontal arrangement is thus vertically reflected. As equals within an administrative layer, coordination is necessary; as subordinate agencies within the administrative hierarchy, reporting and instructions are prerequisites to action. Environmental protection in IZs shares this layered set-up, as portrayed in Figure 30 ("Administrative layers in which entities involved in environmental protection in industrial zones operate"). The spatial-political organisation thus explains the semantics of responsibility – coordination instead of responsibility – in the regulation of environmental protection in IZs.

The earlier chapters highlighted the spatial peculiarities in the administration of the IZ that hinder environmental protection. Summarily, the carving out of an IZ from its geographical administrative layer for direct management at a higher administrative layer thwarts the complaint and denunciation mechanism through which the affected residents might have effected checks or inspections outside of the legislated schedule, which is also when pollution is also mostly likely to occur and be detected[155] (O' Rourke 2002). The two entities that have the most direct control over the amount of industrial pollution, that is the infrastructure developer and the investors of the IZ, are also buffered from local wrath by the administrative layers, since they are technically outside of the administrative structures as private, or half-private, entities, and managed at the provincial level (see Figure 30: Administrative layers in which entities involved in environmental protection in IZs operate). There are also missing structures at the regional level for the situation when wastewater pollution crosses provincial boundaries. In essence, environmental protection in IZs is a multi-fold spatial fit issue. Subsequent acts of legislation apparently have to organise state activities according to this administrative hierarchy and its layers, and essentially reify them.

[155] This observation also concurs with what O'Rourke (2002) found in Hanoi, Dong Nai, and Phu Tho. See also Section 2.3.4 and Section 4.3.2.

Figure 30: Administrative layers in which entities involved in environmental protection in industrial zones operate



The state agencies executing environmental protection in industrial zones exist in different administrative layers, and have different hierarchical positions. The investors in the industrial zones are either public or private but mostly of a mixed nature, and can be managed at either the provincial or sub-provincial level, depending on the scope and scale of its business activity.

This discussion of these spatial peculiarities inherent to the regulation begs the question of whether these are as distinct in everyday practice and actively structure peoples' actions. O'Rourke (2002:227) has observed that information is seldom passed vertically or horizontally, despite this hierarchical design. But, the interviewees made frequent references to administrative levels, about how the commune "does not care" (*Interview: An Giang Binh Long IZ Hamlet manager, 08.12.11*), has no influence (*Interview: An Giang Binh Hoa IZ Household 1, 06.12.11*) or cannot solve the problem (*Interview: An Giang Binh Hoa IZ, Household 2, 06.12.11*), or how "only the province can do this" (*Interview: An Giang Binh Hoa IZ Household 2, 06.12.11*). The observation that law can have socio-spatial effects (Blomley 1994), without these spatial effects being causative of social action and reaction, provides a way for us to reconcile this contradiction. The example of the wastewater management regime illustrates how legislation creates spaces it then has to work around.

5.3.2 Creation and fragmenting effects of new legal spaces

The act of regulation not only legitimised spatial-political state administrative structures, it has also been co-opted to create and define new places. "(I)n socialist states, law is traditionally seen instrumentally – it is the force that gives effect to party policy, whether that be through a legal instrument or policy" (Nicholson 2005:167). The furore of thirty legislative documents that have been passed[156] since the industrial zone as a policy tool was first introduced in Vietnam in 1991 is testament to the appropriation of the force of law for the end of legitimisation. The act of legislating not only served to legitimise the adoption of the policy tool; it also aided the creation and definition of a place, the "reproduction of abstract space". I borrow here from the analysis of Butler (2005), who

[156] See Annex 6, which details all the legislative documents pertaining to industrial zone development, which have been passed since 1991.

considered land-use planning and zoning practices in post-war Australia[157], and observed that "dividing space into zones, imposing homogeneity within them and hierarchically organising these fragments of space have proved a crucial vehicle for the reproduction of abstract space" (Butler 2005:327). To borrow from his conceptualisation, the industrial zone is an abstract space that reflects the paradigm of (foreign) investment-driven economic growth, and the legislative acts have reproduced this dominant perspective of how space is to be used, by implementing such spaces – homogenous and thus extra-local in their purpose, appearances, and management – in every province throughout the country.

Table 16: Wastewater management inside and outside the industrial zone

Elements of wastewater management and their rationale	Only inside the industrial zone	Outside the industrial zone
Environmental impact assessment (EIA) - This report of data about environmental emissions from the industrial producer is the baseline used in inspections	The infrastructure developer submits the EIA for the IZ to the DoNRE-EPA (or MoNRE in the case of a very large IZ). The enterprises submit their EIAs to the IZMB's environmental division (in some IZs, to DoNRE.)	EIAs are only submitted to the DoNRE-EPA when production volumes exceed a benchmark; otherwise, a less detailed environmental protection commitment is due to the district PC, and the environmental division of the Department of Industry and Trade.
Wastewater discharge permits - Issued either by DoNRE or MoNRE depending on wastewater volume.	None of the enterprises need a permit, because they discharge into the sewers of the IZ, which has one discharge point.	All wastewater-producing enterprises require permits
Self-monitoring reports - Containing data on wastewater volume and pollution load, to be submitted by polluters	Frequency not set in law, decided by individual IZMB environmental divisions	Quarterly reports (due to DoNRE-EPA.
Environmental protection charges for wastewater - form of environmental tax based on pollution load	Not set in law. Technically only the infrastructure developer should pay as the only discharger. But legally all polluters (i.e. enterprises) should pay	Enterprises make quarterly reports to DoNRE about the wastewater volumes; DoNRE checks and samples.
Water drainage charge - a service fee for operation and maintenance of water drainage systems.	Enterprises in KCN pay infrastructure fees to the infrastructure developer for drainage services (and others), but sewers often missing in IZs.	Applicable only when the enterprise uses a sewer; usually payable to the water utility company as provider of drainage system.
Inspections - usually scheduled but unscheduled ones happen with complaints.	Frequency not set in law. Team comprises of DoNRE inspectorate, EPA, centre of measurement, and IZMB. (environmental police only in high profile pollution cases)	Biannual. Team comprises of DoNRE inspectorate, EPA, centre of measurement, environmental division of the Department of Industry and Trade.
Checks - unscheduled and less severe: strict procedural requirements of the inspection does not apply, but the results of the checks are not bases for sanctions	Only the industrial zone management board may perform checks	The DoNRE's EPA may perform checks if there are complaints.

Based on interview accounts and legal documents.

[157] He argued for the significance of Lefebvre for critical legal studies, and thus conceptualised "zoning as a codification of the dominant representations of space, and a technical mechanism for reproducing that dominance, by inscribing them in physical uses of land" (Butler 2009:327).

These new places fragmented the wastewater management "landscape". The general wastewater management regime contemplates *one* regime for *all* industrial producers, except those within the industrial zones. Table 16 ("Wastewater management and management inside and outside the industrial zone") shows how enterprises in the industrial zones are exempted from many environmental protection obligations they would have had, if they were operating outside the zone, such as wastewater permits, water drainage charges, or environmental protection charges. While this could be mere omission or oversight because the industrial zone is a new phenomenon, it is also plausible that this can be traced to an objective of the industrial zone, which is the simplification of operations for enterprises. Policy coherence in one area has led to incoherence in another. This fragmentation of the wastewater management "landscape" illustrates how regulation functions as a mode of spatial organisation. The weight of regulation is borrowed to create, define, and give meaning to a new place, which become spaces of ambiguity within the existing administrative structure and the mechanisms already established. Plainly, enforcement difficulties arising from legal ambiguity can be spatially expressed.

5.3.3 The legal geography of unimplementability

How are the Vietnamese condition of unimplementability and the spatiality of law related? The former pertains to the instrumentalisation of law, and the latter is about its inherent spatial nature and effects. While the spatiality of law is independent of its instrumentalisation, law's instrumentalisation has spatial effects. The making of the industrial zone as a place illustrates this best. When unimplementability meets spatiality, "spaces of ambiguity" are born. The term appears tautological as an explanation, but the local state is constrained by the administrative hierarchy, and its organisations-in-charge are constrained by the overlapping operational territories within each administrative layer. While those studying Vietnam's political economy tend to downplay the administrative structure by focussing on local autonomy (Kerkvliet 2003; Kerkvliet and Marr 2004; Koh 2001b; Malesky and Taussig 2009), others have observed 'top-downism' and bureaucratic fragmentation and separatism (Sajor and Nguyen Minh Thu 2009). Fragmentation captures the essence of this argument: "spaces of ambiguity" are the thematic areas that fall between the hierarchical layers, or where operational territories overlap or do not meet. These are the spatial expressions of unimplementability. This suggests a more expansive view of space in the academic discussion of law and space that goes beyond site or place.

That law has spatial manifestations, and is a mode of spatial organisation, is the premise of legal geography. For the legal geographers, law and space are both indeterminate and mutually constitutive. Legal concepts require the creation of spaces: the concept of jurisdiction is based on and linked to the territory within national borders (Ford 1999). Spaces are maintained by acts of law: the division between the public and private spheres has been propped by notions of property (Blomley 1998, 2005; Emel et al. 1992). Three principal lines of inquiry direct this field of research. (1) How do distinctively legal practices shape or contribute to transformations of geographical phenomena? (2) How do geographical or socio-spatial phenomena inform or condition the workings of the distinctively legal? (3) How can analysis of these reciprocal processes illuminate other questions of social research more broadly? (Delaney 2009a)

This work appears to be one of the few applications of legal geography outside of the Anglo-Saxon territories and the common law tradition. The mainstream Anglo-American tradition of law sees legal discourses as anti-relational;

law is rational and determinate, universal and applicable to all contexts (Clark 1989 cited in Imrie and Thomas 1997:1403). This independence of law from specific (socio-political) contexts facilitates a conception of law as autonomous and neutral (Imrie and Thomas 1997:1404). But, this impartiality of law has been questioned and rejected by critical legal theorists (Bartel et al. 2013; Blomley 2006, 2007; Butler 2009; Chouinard 1994; Martin et al. 2010). Within their interpretive paradigm, law is constitutive of social life and not merely reflective of it. As local knowledge and not placeless principles, law is indeterminate and comprises multiple competing ideologies (Blomley 1994 cited in Imrie and Thomas 1997:1404). Legal geographers have sought to challenge or ended up challenging the notion of law as universal, enduring, transcendental truth (Graham 2011 cited in Bartel et al. 2013:343). It is the latter of these dichotomous competing conceptions of law that has shaped legal geography's expositions on law and space in the Anglo-American territories, which cover diverse subject matters ranging from zoning practices (Butler 2005), gentrification (Phillips 2002), indigenous rights to resources (Castree 2004), juvenile curfews (Collins and Kearns 2001), to electronic waste legislation (Lepawsky 2012).

What differentiates Vietnam's legal order from that of the Western civil or common law traditions is its Socialist legacy and the instrumentality of law. While it may be that the Western common law tradition also considers law as a vessel of policy, this is taken to a further extent in Vietnam. Instead of mirroring the society, it reflects the ambitions of the state or the Vietnamese Communist Party, as seen by the focus on "industrialisation and modernisation by 2020" (Tan 2012). This Vietnamese conception of law poses several challenges to theorisation on legal geography.

The first goes to theoretical premises: the law-space nexus is in fact a law-state-space nexus in the case of Vietnam. Law and the state are not conceptually distinct in Vietnam, and it is not merely the duo of law and space but the triad of state-space-law that forms the subject of examination. Vietnam scholars have been silent on spatial structuration: the administrative hierarchy is introduced as background knowledge, and often, the analytical lens focus at a level of analysis (Painter 2003a; Vasavakul 1999). Legal geography's constructivist and critical turn, which has taken it away from theorising about the state and law, means it is also ill-equipped to provide theoretical insights on illegality and unimplementability for the state-law-space relationship in Vietnam. A singular exception is Blomley (1988), who asserted that the state has contradictory functions that it discharges in a contradictory manner, so that conflicts in its actions are bound to happen, most prominently in the field of law. But these conflicts are structured by and situated in time and space, the former reflecting historically specific class relations and the latter as the site of locally mediated ideologies and procedures (Blomley 1988:201). Space, then, matters only because it is a site at which law is mediated by the state. This is not borne out by my observations: while socio-spatial structures affect how the state works and how law is applied, space is first shaped by the state using law.

The more theorised state-law nexus might be able to provide some insights. Rather than seeing non-regulation as a sign of state weakness, some Vietnam scholars have adopted a more nuanced view and consider this strategic state retreat as a sign of strength, as it demonstrates the capacity to govern by allowing the situation to unfold (Kerkvliet 1998 cited in Painter 2003a:22), and the negotiation of new terrain through piecemeal corrections can thus be seen as a manifestation of state strength. Although the Vietnamese state seeks legitimation through the

rule of law, and the local state borrows from the ideological nature of law to bolster its actions[158], the low to non-implementation of the law in reality, and particularly the condition of unimplementability, proves the instrumentalisation of law by the Vietnamese state also ignores law's ideological constraints (Fforde 1986; Nicholson 2005). The condition of unimplementability thus fosters a view of state strength since the Vietnamese state uses law and its ideological weight for its ends. The implication of this for the state-law-space triad is that the state-law nexus presumes a strong state. Is there no legal geography to speak of where the state is weak?

Another challenge arises from legal geographic research methods: legal geographers predominantly work with case rulings (Atkins et al. 2006; Blomley 1989; Collins 2007), but also other forms of legal discourses, like legislation (Hubbard et al. 2009; Lepawsky 2012; White 2002), in countries where the legislature and executive branch are characterised as independent. Discursive sites for analyses of constructions of law and space are scarcer and different in the Vietnamese context. Vietnamese law is primarily concerned with state economic management (Bui Thi Bich Vien 2005) and the amount of discursive material for constructions of law and space is limited. The litigation culture is nascent (Sidel 2008:166ff). This is particularly with regard to environmental protection since environmental litigation does not exist: while the Law on Environmental Protection mentions environmental crimes, environmental experts complain that there is no definition of what pollution constituting a crime would entail (Viet Nam News 2011); the establishment of the Administrative Court, a venue finally for civilians to lodge administrative complaints and defend their rights, was a non-event and attracted no instituted complaints (Nguyen Thi Phuong Loan 2010b:55). Then, the interchangeability of law and party policy means that law must be read together with policy. Policy documents are, for Western legal geography scholars, probably an unconventional form of legal discourse. The problem of discrepancy between the written law and implementation realities and practices also raise the question of whether the written law alone is a sufficient discursive site.

Specific to this work, I was unable to fully engage discourse analysis. Legal geographers see the text as signifying power relations. "Language is used to construct or to reconstruct social reality… [it] is studded with signs, icons, or symbols, which may carry meanings in excess of the simple word being used" (Clark and Dear 1984:84 cited in Blomley 1988:200). The texts with which I worked were translations, some official, some not, and nuances must have been lost in translation. Moreover, this work was not intended as a study of the mutual influence of law and space in a Socialist context. Rather, I stumbled upon the instrumentality of law in the Socialist Vietnamese state, in an inquiry about environmental management failure. Thus, my empirical data collection did not focus on gathering meanings of law from actors' perspectives and narratives engaged by legal actors, which would have been or should be indispensable. Hence, this work's discussion of, and self-classification as legal geography might be seen as retrogressive, for moving back into studies of the text instead of other types of discourses that signify our understanding of space and law.

Nonetheless, this work is a rare application of legal geography outside of the Anglo-Saxon territories and common law tradition, and thus informs the field of legal geography in the following ways: (1) it broaches the theme of legal ambiguity by design, and thus applies yet another non-normative view of law and its characteristics; (2) it expands the "space" in the law and space discussion to go beyond places and sites, to structures; (3) it suggests the

[158] See Section 4.3.1

reintroduction of the state and its spatial expressions because of the state-law-space triad, particularly in a country like Vietnam where the "rule of law" is disputable; and (4) its focus on regulatory documents and implementation reality is another alternative to the focus on case rulings.

5.4 Concluding remarks: Spatiality and functions of law

Environmental protection regulation is an import in Vietnam. The developed countries of today industrialised first before realising the need for environmental protection. The prioritisation of economic growth over environmental protection is nothing unique to Vietnam, and can be observed throughout history. The difference is that Vietnam and other developing countries are choosing economic growth in an era where the discourse is about sustainability and balancing growth and environment. The discursive infrastructure comprises of international organisations, bearers of funds, who communicate these messages both explicitly and implicitly in the implementation programmes they bring along. For instance, the idea of public participation and the EIA are both imports[159], from the global environmental protection discursive infrastructure[160]. The structural and cultural obstacles to their implementation (Clausen et al. 2011; Hostovsky et al. 2010) attest to its foreign provenance. The significance of this is that the environmental protection regulatory framework in Vietnam is not organic. In fact, the impetus for the Law on Environmental Protection was its being a prerequisite to Vietnam's accession to the World Trade Organisation (Wiemann et al. 2006). So, Vietnam's entry into environmental protection regulation was originally motivated by economic interest and the global discourse of rule of law, rather than an organic process in step with public sentiment. In this way, the law was already predisposed to idealism and non-implementation. Moreover, the market plays a central role in this new environmental protection regime. The example of wastewater management shows how pollution control is outsourced, and environmental taxes like wastewater fees are introduced to influence polluter behaviour. As the case studies in the Mekong Delta show, market-provided solutions in an economy that was before some time largely characterised by central command control, erroneously presume the existence of working markets.

These unfavourable operating conditions for the regulation of environmental protection in Vietnam are exacerbated by the condition of unimplementability and the use of legal ambiguity as a governing technology. I argued that the legal framework in Vietnam suffers from a condition of unimplementability because laws are passed as framework documents and need to be detailed and elaborated by implementing guidelines. These guidelines

[159] Per-Olof et al (2005) observed that a new regulatory pattern of diffusion in domestic environmental policy emerged in the 1990s, whereby regulatory instruments that were being practiced were communicated internationally and voluntarily emulated and adopted elsewhere. They theorised that the voluntary adoption of regulatory instruments cannot be exclusively explained by a rational motivation to improve effectiveness, but rather, policy-makers were motivated by concerns of legitimacy and perceived pressure to conform with international norms. This observation seems to hold water in Vietnam.

[160] At the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, the attending countries adopted the Rio Declaration on Environment and Development that endorsed, amongst others, public participation and the environmental impact assessment as cornerstones of sustainable development. Principle 10 states: "Environmental issues are best handled with *participation* of all concerned citizens, at the relevant level. At the national level, each individual shall have appropriate *access to information* concerning the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall *facilitate and encourage public awareness and participation* by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided." Principle 17 states: "*Environmental impact assessment*, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority."

come from profuse sources and with considerable time delay. Pending their issuance, the state agencies prefer to wait than act. While omission is typically seen as non-compliance or non-implementation, the peculiarities of the Vietnamese legislative model require us to see that omission is the default condition since there is both something and nothing to implement: the law is so broad that there are no guidelines for acting. Moreover, the Vietnamese state administration apparatus emphasises equal standing of all state agencies within an administrative layer, and subordination between administrative layers. The semantics of responsibility in the environmental protection regulations reflects this political-spatial reality: agencies are not specifically named, and instead of being charged with responsibility, they are responsible for coordination with another agency. The propensity towards idealisation in regulation also requires legal ambiguity, to allow more room for adaptation and failure.

These are reasons to reconsider many previously made statements about the legal framework for environmental protection in Vietnam. The abundance of legislative action and secondary regulations intended to implement the laws on environmental protection has been said to have ironically thwarted the legislative purpose with the contradictions and overlaps in the legislation (Nguyen Thi Phuong Loan 2010b, 2012). My finding of legal ambiguity as a governing technology provides a different and actor-oriented perspective to omission and non-implementation. O'Rourke (2002) has defined the Vietnamese state as being conflicted between the objectives of environmental protection and economic growth, and this seems to have been confirmed by other scholars, who showed that the efficacy of environmental protection laws are affected by Vietnam's developmental priorities (Bass et al. 2010) of rapid industrialisation and economic growth (Sajor and Nguyen Minh Thu 2009), and its institutional set-up for development planning (Doberstein 2004). However, all these can also be read contrarily in the light of a state that uses law cleverly for its ends, borrowing the force of law to legitimise its actions without acknowledging law's ideological constraint. The observed lack of integration of environmental concerns into developmental plans (Bass et al 2010) can be reinterpreted as the demands for signs of commitment to sustainable development today, which environmental protection documents are a nod to.

It has been observed that the state not only has contradictory functions, but as an apparatus also discharges these functions in a complex and contradictory manner through the technologies and ideologies it engages (Blomley 1988:201). For instance, divisions of labour (a technology), and the adoption of the "rule of law" (an ideology) could be adopted to execute its tasks, but end up as constraints on state actions. This finds application here. The administrative hierarchy is a division of labour technology for the Vietnamese state apparatus, and the rule of law ideology sees the Vietnamese state legislating to legitimise its economic policies. The ideological constraints imposed by the rule of law thus see the state reacting by employing legal ambiguity as a technology. But another function of the Vietnamese state is environmental protection, and the discharge of this function is hindered by the existing technology and ideology: environmental pollution issues ignore operational boundaries inherent to the administrative hierarchy, and the rule of law ideological constraint sees environmental protection legislation becoming an end than a means. Law enforcement thus becomes a challenge for the local state, because of the contradictions in functions, technologies, and ideology.

The spatiality of law and its dual role as instrument and constraint also pushes us to reconsider the typical consultant report recommendations of legal reform and strengthening the regulatory framework. The proposed

fix of capacity building (AusAID 2001; WB 2010b) implicitly views a weak legal framework as unintentional and invariably a sign of state weakness, thereby ignoring spatial-political structural characteristics of Vietnam, the role of law in sustaining them, or how they in turn affect the workings and drafting of law. Moreover, the pursuit of legal certainty through legislation is a downward spiral. Franz and Keebet von Benda-Beckmann (forthcoming cited in Braverman et al. 2013:26; 2014) have pointed out that the intensification and complexity of modern regulation have impacted on the temporality of legal space, because the need for a consistent and stable legal regime sees improvements in the form of alterations that create ambiguous and temporary legal spaces. The condition of unimplementability itself can be seen as an example of this vicious circle. The pursuit of legal certainty is limited by the generation of new spaces of ambiguity, as the example of wastewater management regulation in industrial zones attests.

6. A MULTI-DIMENSIONAL SPATIAL APPROACH TO ENVIRONMENTAL MANAGEMENT ANALYSIS

6.1 Empirical findings

The research question motivating this work is: "What is the state of wastewater management in the industrial zones of the Vietnamese Mekong Delta, and are there more contextualised alternatives to the common explanatory narrative of capacity, financing, and legal issues?" A summary answer based on four case studies along the Hau River is that wastewater in the industrial zones of the Vietnamese Mekong Delta is poorly managed, and this begins with the preventive features, through the day-to-day environmental management, to monitoring and enforcement at the end of the pipe. Capacity, financing, and legal issues would be a correct diagnosis, but inadequate. The contextualised alternative narrative would be a socio-spatial one that considers the symbolism of the industrial zone and its extra-locality, boundary-marking in the state administrative system, and law as a mode of socio-spatial organisation.

Industrial zones are a popular policy tool in Vietnam and the Mekong Delta for achieving greater industrial output and economic growth, and the imperative and incentives to establish them has led to overlooking of the suitability of chosen sites, and consequently, an oversupply of industrial zones, many of which sit on fallow and formerly agricultural land, along vital transport veins. Farmers are simply told they will be resettled, and the only question that remains open is the compensation rate for their land. Of the established industrial zones that attracted some investment, occupancy rates are low. None of the industrial zones in the Mekong Delta drew the interest of private business, and the provinces had to step in with their own half-business-half-public infrastructure developers, relying on limited funds from the central budget for the purpose of infrastructure development, to which a centralised wastewater treatment plant belongs. Financial constraints are part of a chicken-or-egg dilemma: a centralised wastewater treatment plant cannot be designed without knowing the wastewater profiles of the factories, but the industrial zone is not filled up yet, so it is difficult to design a plant. It is too costly to construct a large treatment plant, and a small one won't do. The regulatory framework presumes idealistically that every industrial zone would be fully filled up with investment projects, and demands that a centralised wastewater treatment plant, designed to handle the pre-treated wastewater of all the factories, be constructed before the individual investors commence operations. The socio-economic reality in the Mekong Delta has thwarted its purpose, and the industrial zones contravene the regulations from the start.

Day-to-day management is an opaque matter. What is known is what the factories report, following their legal obligation to send self-monitoring reports and results. This moral hazard exists as well – perhaps unavoidable through relaying unreliable information – for the industrial zones' management board. The only peeks into wastewater management practices of the factories happen on the biannually-scheduled inspections, where every state agency that has a stake in environmental protection and the industrial zone is, and must be, present. The factories are informed and prepare their facilities, turning on their wastewater treatment plants beforehand. Those who did not even construct a wastewater treatment plant are issued sanctions, but these small sums barely deter

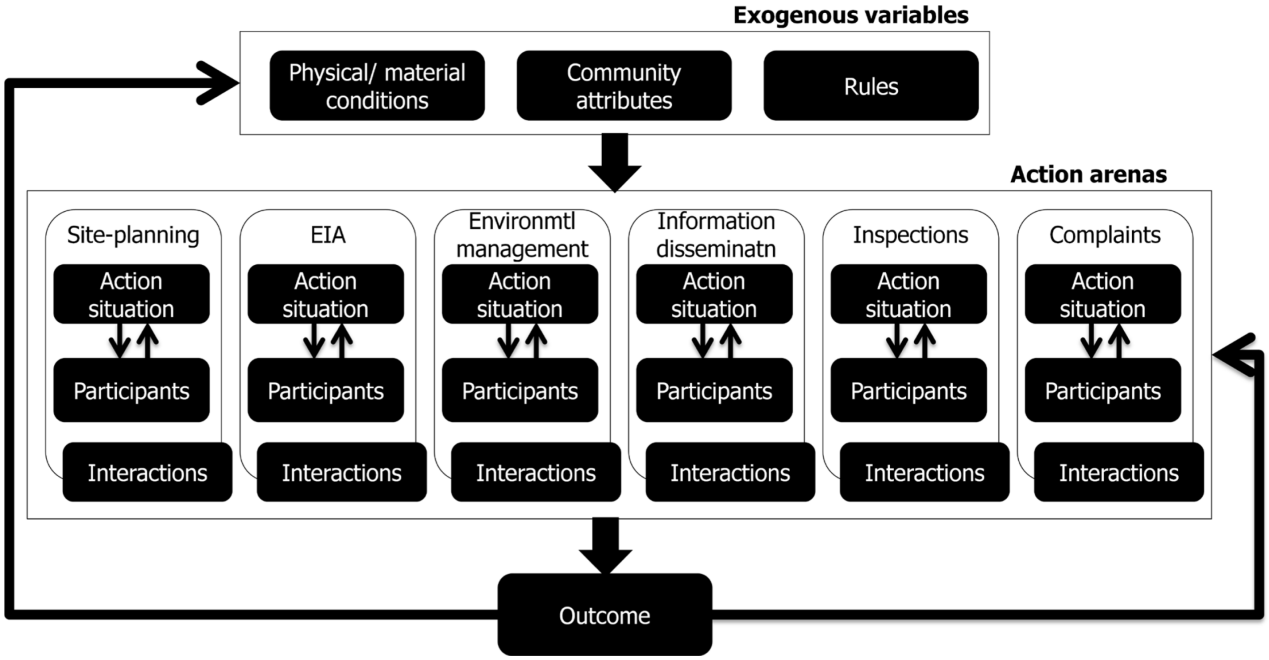
them or incentivise the construction of a treatment plant. Thus, at the end of the pipe, monitoring and enforcement barely plugs the leak.

6.1.1 Through the lens of institutional analysis

The collection of this empirical data was enabled by employing the institutional analysis and development (IAD) framework (Ostrom 2005) as a heuristic tool. The institutional analysis framework casts attention on practices affecting wastewater management; the actors or participants involved in them; the rules; the contextual setting such as the physical and material conditions, and community attributes; the action situation (options and information available) for the actors; the outcome of the interactions; and additionally proposes evaluative criteria for the outcomes. As this work is not concerned with and wished to avoid policy recommendations, the last factor was left out in the analysis.

Applying the IAD, eight practices influencing wastewater management were identified: site-planning, permission granting for operations, environmental impact assessment, day-to-day environmental management, information dissemination, monitoring of compliance, sanctioning, and complaints. These practices span the preventive to the end-of-pipe and affect wastewater management differently. The array of actors is correspondingly large; they are depicted in Figure 12 ("Actors involved in environmental management in industrial zones") of Chapter 2. But this is not merely through the seemingly wide range of practices that affect wastewater management. It is also a design of the regulatory framework. However, much lies in the hands of the polluters, the only ones with direct impact on wastewater, and the enforcement agencies. The rules exist, but the regulatory framework is plagued by gaps and ambiguity, and its implementation is rather the key issue. To this extent, the rules do not have the function of stipulating and allocating responsibility. DiGregorio et al (2003) observed aptly that the law on environmental protection is best understood as an enabling document. Much has been left open and "coordination" amongst the agencies can be seen as both the formal rule and the strategy.

Figure 31: The institutional analysis framework applied to the problem of wastewater management



The contextual setting was unfavourable for environmental protection. The location was determined by the scarcity of transport infrastructure: the industrial zones are on the four rare national roads and ideally with access to the river arms, which then also offered an easy solution for waste disposal. Agricultural land often had to make way for industrial production, regardless of its productivity, farmers' opinions or the market feasibility of a large industrial production site. Because the industrial zones were unable to attract the investment they had been designed for, infrastructure for environmental protection could not be financed by the private sector, but the public coffers were less abundant. Also, while some scholars noted that complaints and the media were important in negotiating settlements (DiGregorio et al. 2003), the neighbouring residents could barely influence, let less regulate the industrial producers. Their exclusion began early: contrary to legal regulations, residents' opinions were not sought during the process of making the EIA reports for the IZs. The complaint mechanisms cemented their position.

Finally, the action situations were characterised by a tilt towards costs than benefits, and poor information. For the polluter, the option was either to take up a loan with high interest rates in order to construct a WWTP, or to ignore the legal regulations and pay sanction sums which are cheaper than construction and maintenance of a WWTP. The dissatisfaction and even anger of the residents did not seem to weigh on their calculus. The advising environmental consultancies are not always well-qualified, and customer satisfaction hinges on cheap and easy solutions. The infrastructure developer waits patiently for the funds to arrive if it is a "non-business unit", as in An Giang and Hau Giang; or else it struggles to find a viable financing option and way to pass on the costs – of construction, operation, and maintenance – that would meet the expectations of the provincial authorities and IZ investors, as in Can Tho. The management board does not manage to manage: they are supposed to make sure the industrial zone is occupied and profitable, and hassling investors defeats this purpose. Their management is limited to the biannual reports sent by the investors about the results of their "self-monitoring"; this is the only evidence required of the existence and actual operation of an environmental management system. These figures are relayed to the national environmental protection agency, and it is easy to see why official figures in Vietnam are notoriously unreliable (Ohlsson et al. 2005). At the end of the pipe, the enforcement agency has to, and wants to, achieve procedural correctness in its inspections to avoid being sued, but this compromises its mandate because of the inefficiency of a correct procedure in exposing pollution.

The outcome is that there is no, or at best partial, wastewater treatment. Factories do not construct iWWTPs, and the rare few that have their own iWWTPs fail to operate them continually. The infrastructure developers do not construct CWWTPs; only one out of the surveyed seven IZs had a CWWTP. Environmental management – "self-monitoring" – is more of a choice than an obligation given there are no incentives to be honest if environmental fees payable are based on the figures reported. Monitoring, and enforcement, is characterised by ineffectiveness. The biannual scheduled inspection rarely exposes polluters, and at best sanctions the failure to construct a WWTP, not the act of intentional pollution. The unscheduled inspection might be more effective, but a certain momentum through cumulative residents' complaints has to be achieved for the IZ to make it onto the agenda. The procedural requirements of the complaint mechanism have a deterrent quality, as potential complainants fear repercussions. Thus, the institutional arrangements around wastewater management in the industrial zones of the Mekong Delta are marked by high transaction costs in obtaining information and coordination.

6.1.2 Socio-spatial aspects revealed by the data

By this account, the problem of wastewater management in industrial zones in the Mekong Delta is probably similar to that in other countries: high transactions costs in institutional arrangements. This is the "institutional weaknesses" and "institutional fragmentation" that the literature on environmental management in Vietnam often refers to. But it also suffers from the very weakness – a-contextuality – that this dissertation had sought to avoid: none of the structural features of the transition economy feature in this narrative. This is partly due to presenting the data in categories according with the elements of the IAD framework with a focus on the outcome, but also because the framework deals with contextual settings as mere "exogenous variables".

When the IAD elements were taken as data collection categories and not data analysis categories, a different, more nuanced reading became possible. Socio-spatial aspects revealed themselves. For instance, its wide approach of looking at practices that *could* influence wastewater management meant that an issue such as site-planning became relevant. Through interviews with the provincial state agencies responsible for planning IZs, the discourse around the IZ offered valuable insights into its symbolism and extra-local management. The multi-level analysis that the IAD framework calls for (see Figure 6: Levels of analysis and outcome in the IAD Framework in Chapter 1) also directed attention to the levels at which rules are made and changed and influence other (lower-level) rules. Although Ostrom refers to them as operational, collective choice, constitutional, and meta-constitutional situations, the interviewees' grammar consisted of administrative organisational levels. The elaborate grammar of rules directed me to work extensively with the regulatory documents. Even though Ostrom does not refer to only laws with "rules", the analysis of the legal framework revealed the fuzziness of operational boundaries of the different state agencies, as evidenced by the constant calls to "coordination". It also revealed a differential treatment of industrial polluters, stemming from the extra-locality of the IZ management structures. These socio-spatial aspects are the context that this work had sought.

Symbolism of the industrial zone and its extra-locality

The IZ started as an experiment of foreign investors. The idea was simple: to attract foreign investment, provide infrastructure and reduce bureaucratic requirements. The initial IZ management structures reflected the priority given to easing entry and procedural formalities for foreign investors: all the IZs in the country were centrally managed. Its initial success led to its adoption as a policy tool for increasing industrial output to achieve "industrialisation and modernisation by 2020". Plans were drawn up by the central government to establish so and so many IZs in all parts of Vietnam. As IZs proliferated, the central management of their management boards became impossible. The transfer of these IZMBs to the provincial governments marked its deployment as a provincial policy tool and its acquisition of symbolism. Since they were to be found in the more industrialised provinces, the IZ soon became a proof of "having made it". Provincial governments could not get enough of them: even the second least industrialised region of Vietnam, the Mekong Delta, boasted of about a hundred, between thirteen provinces. The IZ had become a symbol of progress. The local residents perceived it similarly as a promise of more secured livelihoods.

There are three aspects to its extra-locality, a term I coined to describe its unusual administrative position within the Vietnamese administration, which reflected its status as a policy tool. In the Mekong Delta, the IZs were

inorganic places. They stood out amidst the surrounding agricultural fields. Their tall gates put on a front of a different socio-economic narrative. They were there, and they were not. Most of these industrial zones were, literally, a front: behind the gates, plots of land sat waiting for investors. The second aspect of its extra-locality refers to its management. Investors would only be coaxed if they would not have to deal with the bureaucracy; the IZMB had to be the "one-stop-shop" that would give investment licenses, business licenses, approve EIAs, *etc.*. This expediency clashed with the geographically-organised provincial administration. The district authorities manage everything within their district boundaries, but the IZs in their territories were off-limits. The management structures carved the IZ out of their physical location and the corresponding government structures at that location. The consequence of this extra-locality caused by spatial mismatch is the impediment to community regulation since the complaint mechanism is place-bound and the IZ is not (see Sections 2.3.4 and 4.3.2). The third aspect relates to its planning and implementation, which is carried out without the participation of the locals or any consideration of local ecology (see Section 4.2.3), and can be considered a sort of meaning-giving act that confers policy importance to the IZ.

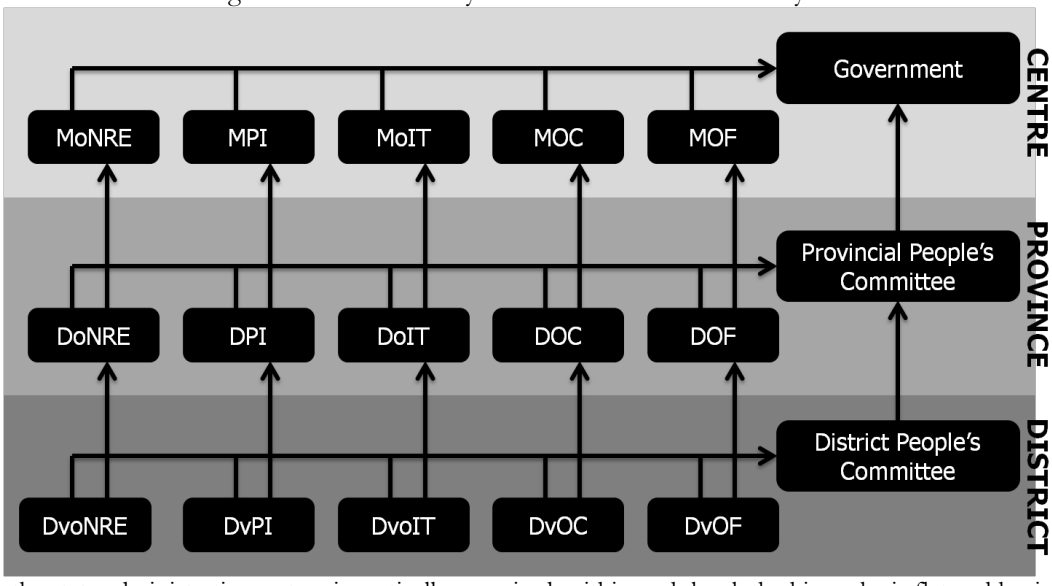
Boundary-marking in the state administrative system

The Vietnamese state administration system is not merely an organisational fact; it is an organising force. The geographical division and subdivision into centre, provinces, districts, communes, wards, hamlets and areas is matched and propped by the organisational hierarchy of ministries-departments-divisions-office. These hierarchies appeared as boundary-markers in interviewees' accounts. Residents were aware of the levels of government and how removed they were from the district and province, and how this hierarchy reduced the chances of their complaints being heard. Respondents from state agencies referred to both their higher-ups, the province and the ministry, when it came to making decisions, and the other state agencies when it came to taking actions. This shows how the hierarchical relations are both vertical and horizontal. For instance, I was not able to obtain permission to interview *ministerial* departments, because I was apparently merely hosted by a *provincial* university. The Vietnamese state administration system exerts socio-spatial effects. Critical geographers would consider these frameworks for social action as "scales", although "scale" has been differently defined by various groups of scholars. For instance, in the analytical vocabulary of environmental governance literature, "scale" describes the biophysical realm. Thus, these findings about the social-organising force of the administrative system are significant for the debate on scale, and will be discussed specifically in Section 6.2.2.

This organising force of the Vietnamese state administrative system is also present horizontally. Other than being vertically-, geographically-organised, the system is also horizontally-, thematically-organised. Figure 32 ("Horizontality in the state administrative system") portrays this: within each level, there are several agencies covering different themes. They work both geographically, reporting to the authorities at their level, but also thematically, reporting to the authorities above them. In other words, every state agency has two sets of boundary-markers. Because the horizontal boundary-markers are more "fluid" and contestable than the vertical, they are also more easily erected. Cross-thematic issues are undoubtedly a challenge, but even something like wastewater management which is a clear-cut environmental issue, requires the involvement of other thematic state agencies. For instance, at the provincial level, departments for planning and investment as well as construction are involved

in site-planning, and finance is involved in sanctions and environmental fees. While coordination is prescribed in these multi-organisational issues to cure the problem of unclear operational boundaries, it also enables the marking of boundaries. Rather than contesting and expanding their operational boundaries, the state agencies have been observed to restrict themselves by claiming that the new or uncertain issue does not fall within their "area of competence".

Figure 32: Horizontality in the state administrative system



Although the state administrative system is vertically organised, within each level, the hierarchy is flat and horizontal. The thematic agencies listed are only an example and not exclusive.

The boundary-marking brought about by the vertical and horizontal organisation in the state administrative system characterises it as a constraining structure. As a structure, it could thus be characterised as rigid and hierarchical. But this is challenged by two observations made in this work. One, Vietnamese administrative structures are ironically un-fixed and dynamic: during the transition from central-planning to market economy, the redefinition of the relationship between central and local governments saw the redesigning and reorganising of political space (Vasavakul 1999). A city can become a province (e.g. Can Tho City and Ho Chi Minh City) and a district can become a province (e.g. Hau Giang). With the conversions, funds become available, and a series of interventions and measures that were the prerogative of provinces suddenly become available. Although the top-downism of the central government has led to a hierarchical manner of execution, territorialisation is quite separate and dynamic. These apparently contradictory findings too have also been observed in China (Shen 2007; Shen 2010). Two, there is the institutional innovation for IZ management, where a new thematic state agency, the IZMB, was introduced to the provincial level, without vertical mirroring at the central or district level (Figure 33: Horizontality in the state administrative system). This might attest to the special policy position of the IZ: if a cross-thematic issue is important enough, it will not be left to inter-agency coordination and boundary-marking. But it also shows that the structure is not that rigid as to reject new forms of boundaries that do not conform with the logic of the structure. The existence of boundaries encourages the erection of boundaries, but the reality of fluidity coerces the revision of boundaries through institutional innovation, in the sense of setting up new organisations, as has also been observed in water policy reform (Do Thi Thanh Huyen 2008; Molle and Hoanh 2009). Indeed, rigidity and fluidity appear to be two sides of the same coin.

Law as mode of socio-spatial organisation

Given the condition of unimplementability, whereby omission is the default because laws need implementation but cannot be implemented without guidelines in the form of sub-laws, the law communicates and translates between the state administrative system as structure and the state administrative system as executor. Thus, the Vietnamese government looks to the law when reviewing old and defining new operational boundaries, and so the state agencies look to the law to find out where to mark their boundaries. This has been demonstrated by the institutional innovation for managing IZs (Section 3.3), and the regulatory documents on wastewater management in IZs (Section 5.2). The state agencies, unclear of where their operational boundaries are, are more than happy to fall back on the written law and its silences (Section 4.3.1). The crux of the matter is that law is an instrument of socio-spatial management (Section 5.3). This assertion rests on a relational view of law and society, and society and space. If law shapes society and vice versa, and society shapes space and vice versa; it can be accepted that the use of law to shape society will also shape space, and that space in turn will also shape law. The latter is well illustrated by the legal geography of wastewater management (Section 5.3.2), where the law and its other regulatory objectives are in turn affected by the boundaries it has erected, and spaces it has created.

Accepting law as a mode of socio-spatial organisation also requires accepting that the law has more functions than traditionally conceived, and that some of these contradict our traditional understanding of its functions. I characterised the frequent use of "coordination" in the regulatory documents as an intentional non-resolution of boundary clashes, and argued that legal ambiguity is a governing technology. This definitely contradicts our traditional notions of law as providing clarification. Law is also discursive. The inextricable relationship between law and policy in Vietnam also means that the focus on "industrialisation and modernisation by 2020" inevitably leads to a neglect of environmental concerns (Tan 2012), and provides a certain societal and social meaning to certain places that have unique policy positions. The prime example here is the industrial zone, a tool for achieving the industrialisation dreamt of in Vietnam. The bureaucratic stress on the law ensures continuity of the main development mindset, and also helps to maintain the IZ's place paradigms of extra-locality, as expressed by the law.

6.1.3 Contribution to knowledge on wastewater and environmental management in Vietnam

The empirical findings of this work have confirmed previous findings about environmental, specifically wastewater, management in Vietnam. These are: (i) inter-agency coordination as an impediment to effective monitoring (Bui Ta Long et al. 2008; Le Hoang Viet et al. 2009); (ii) unreliable figures (Ohlsson et al. 2005); (iii) lack of economic incentives for industrial producers to treat wastewater (Le Quang Thong and Nguyen Anh Ngoc 2004); (iv) the general lack of financing options (MoNRE News, 14.04.11); (v) industrial producers' attitudes towards environmental management (Le Van Khoa and Boot 1998; Phung Thuy Phuong 2002); (vi) the gaps and ambiguities in the regulatory framework (ICEM 2007b; Nguyen Thi Phuong Loan 2012; WB 2010a); (vii) the gap between implementation and the regulatory framework (Clausen et al. 2011; DiGregorio et al. 1999; Do Thi Thanh Huyen 2008; Nguyen Thi Phuong Loan 2010b); (viii) the lack of participation in preventive environmental management (Clausen et al. 2011; Doberstein 2004; Hostovsky et al. 2010); (ix) the lack of environmental awareness and environmental information (Mol 2009); (x) the lack of functioning markets for principles of

economic efficiency to take root (Evers and Benedikter 2009); and (xi) the prioritisation of economic growth over environmental protection (Bass et al. 2010; DiGregorio et al. 2003; O' Rourke 2002). However, my findings also differ on some finer points.

First, there is the thesis, based on the centrality of coordination in the regulatory framework for wastewater management, that legal ambiguity is designed, rather than an unfortunate outcome of capacity issues in legislative action. It is difficult to reconcile this thesis with most of the literature. To begin with, analyses of the regulatory framework have been motivated by the aim of making policy recommendations (ICEM 2007b; Nguyen Thi Phuong Loan 2012; WB 2010b) which implicitly denies intentionality in ambiguity. Analyses revealing implementation difficulties also trace them back to structural barriers rather than intentional legislative imperfection. For instance, scholars who examined the EIA process in Vietnam point to the mixed messages and structural barriers entrenched in the Vietnamese cultural and political context (Clausen et al. 2011; Doberstein 2004; Hostovsky et al. 2010). The same narrative is employed to explain the clash between the adoption of new water policies of foreign provenance, such as water markets, water licences and permits, and the polycentric complexities of Vietnam (Do Thi Thanh Huyen 2008). While the two camps clash about what the solution is—simple legislative correction, or encouraging structural change – neither supports the thesis of intentional legal ambiguity.

On the other hand, Beresford, a political economist who has studied the Vietnamese transition economy, has also observed the Vietnamese state operating with deliberate ambiguity in apportioning accountability and responsibility, by creating administrative elements as a problem-solving technique, and blaming weak organisation and the low technical capacity of the cadres instead of poor policy direction (*Personal communication: Bonn, 11.12.12*). The frequency of legislative action, which has created room for bureaucratic discretion (Tenev et al. 2003), is another reason to reconsider legislative correction as a solution, and also supports my thesis that legal ambiguity facilitates state action. Waibel et al have also argued that the peculiar structural features of the Vietnamese state offer more explanatory power than "lack of capacity, inadequate institutional arrangements, or shortage of resources" (2012:193). There are fierce struggles within the state bureaucracy for the division of functions and administrative responsibility and the corresponding financial resources, and this can be observed horizontally and vertically in the tension between ministries and other central state agencies, as well as between central and local bureaucratic units (Waibel et al. 2012:192f). National directives and legal frameworks, though binding for all, require local specification; but the bureaucracy – its low financial incentives, lack of formal transparency, lack of clarity, and overlap between jurisdictions – encourages evasion and non-compliance, and the local governments tolerate violations of what they hold to be unworkable policies (Shanks et al. 2004); yet, mechanisms to identify, sanction or control such contradictions are ineffective or entirely missing (Waibel et al. 2012:193). These repeated observations of the condonation and perpetuation of legal ambiguity support my thesis of intentional legal ambiguity.

Moreover, despite the stated commitment to sustainable development (Bach Tan Sinh 2004), the meta-narrative in Vietnamese developmental priorities emphasises economic growth (Tan 2012), and considers environmental protection as the prerogative of a wealthy nation (Bass et al. 2010). O'Rourke (2002) captured this contradiction by naming Vietnam the "conflicted environmental state". It is plausible that, given the need to do something for

sustainable development and the availability of law to demonstrate that intention, the prioritisation of the economy over the environment might manifest itself in legal ambiguity that prejudices effective monitoring of economic agents. Section 2.3 explored the structural manifestations of these conflicting priorities and the implicit choice that has been made. The technocratic state is still relevant in modern Vietnam, as is the persistence of the weaknesses inherent to central planning. Instead of political solutions, technical and technological solutions are sought. This is a viable line of argument for later analyses of regulatory documents and legislative change.

Second, communities were agents of change at some sites of industrial pollution (O' Rourke 2002, Phung Thuy Phuong and Mol 2004, Sikor and O'Rourke 1996), but this was missing at the field sites in the Mekong Delta. The interviewed residents were daunted by the procedure for filing complaints, and relied on lodging their oral complaints with their hamlet or ward manager. Hy Van Luong (2003) observed that local community ties deter potential abuse of power by local officials, but that this is more obvious in the North and Central Highlands, than in the South. Why is the South less inclined to public outrage? Some hypotheses for my "anomalous" observations, based on field data and the literature, include: (i) the pollution has not reached the necessary critical severity that it has in the central and northern regions which have industrialised to a greater extent (Dang 2009; DiGregorio et al. 1999; Le Thi Van Hue and Sajor 2011; Mahanty et al. 2012; MoNRE 2008; Nguyen 2009); (ii) the lack of public participation is often traced to the socio-cultural values of emphasising the collective over the individual (Hostovsky et al. 2010) and this is reflected in the cumbersome complaint mechanism which does not admit individual complainants; (iii) specific to the case of community regulation of the industrial zones, the different administrative levels at which they exist undermines and prevents a relationship between the IZMBS and the residents; (iv) the media is often named as playing a critical role in grassroots activism, but the Mekong Delta rarely makes it onto the national visier (*Interview: Journalist from VietNamNews, Ho Chi Minh City, 11.01.12*); (v) there is still no culture of environmental litigation, which in Western countries drives environmental management changes; and (vi) there is a fundamental need to question the assumption of a community from proximity. In any case, the apparent difference between Southern and Northern communities in their reaction to unchecked industrial pollution is an area for further study.

Third, the apparent disenfranchisement of the sub-provincial authorities in this work enriches the body of work on centre-local relations. The governmental levels and their mediation of the edicts from the centre are a recurring theme in literature on Vietnam. For instance, Hicks (2005) observed district governments operating with more autonomy than expected in the implementation of agricultural policies of the central government, although Malesky (2004) considered provincial governments as the agents of "fence-breaking" in the South, a term coined to describe the acts of resistance put up by some provinces in the Mekong Delta towards the policies imposed by the Northern central government, and how they eventually led to reforms (Angie Ngoc Tran and Smith 2005). Koh, on the other hand, sees more autonomy in the operations of the ward (2004 cited in Gainsborough 2004). The phenomenon of IZ development is relevant to the debate on centre-local relations to the extent that the administrative level chosen for implementation appears to be the only administrative level that actually participates. The district and ward/commune authorities had little autonomy over something that was physically happening within their operational boundaries, because it had been explicitly designed as a provincial project. This accords with the previous observation that decentralisation has not taken place according to the principle of subsidiarity

and devolution stops at the provincial level, such that sub-provincial local governments have no influence over decision making (Waibel et al. 2012:191). Here, the non-engagement of the sub-provincial levels was detrimental to proper implementation; there are more IZs than needed because it was *easier* for the provincial authorities to designate plots of land for industrial purposes without involving the local authorities. This example is a warning for projects that are supposed to have local effects, which are designed as provincial projects. Future research could investigate the evolution and extent of the culture of "fence-breaking". Where has this culture of "fence-breaking" unique to the South gone to, and is it applicable to developments in the environmental sector?

This next point is related to the previous. The local perspective has been the dominant approach employed by scholars studying rural Vietnam. The literature abounds with water user groups (Benedikter and Waibel 2013; Waibel and Glück 2013), farmer groups (Fforde and Nguyen Dinh Huan 2001; Fforde 2008), local knowledge about floods (Ehlert 2011), and other examples of "everyday politics" (Kerkvliet and Porter 1995; Kerkvliet 2003). This is a worthy anthropological focus that has widened our knowledge of rural Vietnam. Given the divergence between plans presented by the national government and actual action on the ground, this is also a justified research focus. But, this example of IZ development shows that any social phenomenon can be studied exclusively at any governmental level, but focussing on one governmental level – usually the national/central in previous work on IZs (Gauthier 1996; Mazur et al. 2008; Penrose and Minh 2010) – would present a partial view. The consideration of the local perspective alone would not have enabled insights into the discourse around IZs, and how it has contributed to place-making. It was a multi-level analysis – the simultaneous consideration of the national, provincial, and local level – that allowed a holistic consideration of a new social phenomenon.

Last, but not least, the phenomenon of IZ development gives cause for reconsidering the role of the Vietnamese planning mechanism. The complexity and variety of planning documents[161], and the fact that the majority of them are designed not to be implemented but merely hung on the walls (Coulthart et al. 2008f) would suggest a justified dismissal of the planning mechanism as a structural relic of the command economy. However, these plans and planning documents constitute a body of discourse: the guiding development vision of industrialisation and modernisation by 2020 is thoroughly reflected in Vietnam's various socio-economic development plans that prioritise the socio-economic above the environmental (Tan 2012). In this way, the dominant thought expressed by the planning documents shape the perceptions of both plan-makers and plan-executors. Similarly, the discourse in the planning documents for IZs in Vietnam has endowed upon it a symbolism for modernity and progress, and aided in place-making of the IZ. These examples make the case for not writing off the planning documents in analyses, despite widespread observation of non-implementation, for they could still be used as a source for discourse analysis.

[161] For instance, there are plans (*kế hoạch*) and orientations (*quy hoạch*). Although both are usually translated as "plan", *quy hoạch* appears to reference a longer-term perspective and contains lesser details than the *kế hoạch*, and hence has also been translated as "planning" (Nguyen Luong Ngoc et al. 2010b) while *kế hoạch* is translated as "plan" or "detailed plan". The terminological array does not end there: *chiến lược* meaning strategy (Nguyen Luong Ngoc et al. 2010a) and *phương hướng*, meaning orientation, are also common. This differentiated understanding of the word "plan" is emblematic of the policy-making apparatus in Vietnam (Coulthart et al. 2008; Tan 2012).

6.2 Theoretical implications

6.2.1 IAD as applied to a non- common pool resource issue in a spatial manner

The institutional analysis and development (IAD) framework was developed to study problems of common pool resources, which are characterised by subtractability and non-excludability: one user's consumption would decrease the units available for consumption by other users, and yet, it is not possible to exclude people from consumption. Examples include fisheries and water abstraction. The problem to which the IAD has been applied to in this work is industrial pollution. Pollution is neither a good nor a service provided by nature[162] and can hardly be characterised as subtractable and non-excludable. Usually, it is characterised as a negative environmental externality by economists, and the approach is to "re-internalise" the negative externality via economic instruments (Dahlman 1979; Lehmann 2010). This has already been suggested by previous works on environmental management in industrial zones in Vietnam, and is not the goal of this work, which was to understand how, and not to prescribe solutions. For this reason, the IAD is a much more appropriate tool because of its sophisticated development of the analytical elements. But its utility was also limited; in this research, it served better as a data collection tool than as a research analytical framework.

For one, trying to apply the IAD in its entirety is difficult for non-common-pool resources. One unsuitable element was the elaborate grammar of rules. The underlying idea is that individuals face a mix of normative and material motivations (Crawford and Ostrom 1995:589f). Thus, institutional analysts seek to differentiate between rules (formal and informal), norms, and shared strategies. Additionally, they differentiate between levels of rules: there are meta-constitutional rules, constitutional rules, collective choice rules, and operational rules. While this might be the degree of complexity and differentiation needed to study unwritten or unarticulated norms with regard to common pool resources like irrigation canals or forests, this proved to be an unsuitably complex grammar for studying a problem such as pollution which is already strictly regulated by formal governmental legislation.

Another problem in applying the IAD pertained to its characterisation of contextual factors as exogenous variables. This is a contradiction. Institutional analysts have themselves warned against the search for an institutional fit, and argued for the recognition of institutional diversity (Ostrom 2005) in the variety of settings possible. Yet, if context matters, why is it theorised as being exogenous to the action arena? In this work and in the case studies, physical and material conditions were not exogenous but determinant of outcomes. Second, these are not the only type of contextual factors. Discourse, power, socio-economic change, distant political forces are also aspects of the contextual setting, but the IAD as a model is structural-functionalist and does not encourage a more constructivist approach (Clement and Amezaga 2009; Clement 2010; Clement and Amezaga 2013). Clement and Amezaga (2013) have hence adapted the IAD by introducing "mobilising contextual factors" and "facilitating contextual factors" to differentiate between ideational and physical context. As such, with this approach, the application of the IAD as a theoretical framework does not have to foreclose considerations of power and discourse, but it seems that the

[162] Although water quality is such a good. The spatio-temporality of the characteristics of water means that water can be both excludable and subtractable if we think of water volume use; but the consumption of water quality is both subtractive and non-excludable.

IAD framework might also richly contribute just as a data collection tool, than as an analytical approach. It could have a second life as a tool of the inductive research strategy.

The IAD Framework, used as a data collection and not data analysis tool, was, and could be, reinterpreted as a spatial approach. The IAD itself directs attention to socio-spatial conditions through the elements of "biophysical and material conditions" of the place where the resource is located, and "community attributes". It also employs a multi-level analysis, importantly, without specifying or presuming that these are governmental levels or geographical levels. These are: the operational level, the collective choice level, the constitutional level, and the metal-constitutional level (see Figure 6: Levels of analysis and outcome in the IAD Framework). Thus, the IAD Framework conceives of levels as sites where rules are made and remade: these are essentially "sites of social struggle", or "scales" in the human geographic comprehension. Even networks are accounted for, because the analytical agenda is not place-specific, but considers all practices that could influence management.

6.2.2 Epistemological-ontological debates on scale and the non-Western field

The repeated discussion of the administrative hierarchy and its layers raises the question of whether this is an engagement with scale. The positioning of this work in the multidisciplinary field of environmental management makes answering this question harder because of the different ways different disciplines engage with scale. Even within a discipline, there is no unanimous usage, and this is particularly so for the social sciences where social phenomena encompassing many scales and levels are studied (Gibson et al. 2000). Following the analytical terminology of literature on environmental governance, scale would be retained for biophysical hierarchies, while layers within political hierarchies are referred to as levels (Cash et al. 2006; Moss 2004; Moss and Newig 2010). Yet, these Vietnamese governmental levels were frames for social action and inaction, and were reproduced by routinised social practices of referring to them. These can be seen as scales, in its human or social geographic sense – scale is not merely level or size, it is also relational. The concept of scale is subject to much conceptual debate (Brenner 2001; Cox 1998; Leitner and Miller 2007; MacKinnon 2011; Marston et al. 2005; Moore 2008); three aspects will be addressed here. First, the weight given to the Vietnamese administrative hierarchy in my analysis allows for critical reflection on scale as a category of practice and category of analysis, and how these epistemological and ontological leanings affect the theorisation and observations on scale. Second, scale has been mainly theorised by Western scholars drawing on empirical data from Western contexts. Third, the relevance of scale for environmental governance does lie in the recognition of the human/radical geographic conceptualisation of a politics of scale.

Is scale research epistemological or ontological? Is scale a category of analysis or a category of practice? Is scale structure or agent? These three debates are related and almost paraphrases of each other. The use of scale as a category of analysis has been criticised as a misinterpretation and misapplication of scale as a category of practice (Moore 2008), on the basis that research on scale ought to focus on scalar practices of social actors, and not scale as an analytical category, meaning practically that it should not look at any particular scale, but how processes give rise to forms of organisation (Neumann 2009; Rangan and Kull 2009). One argument that lends weight to this call for adjusting the research agenda is that scale has been overwhelmingly vertically conceived or conceptualised –

the local to global mode of analysis (Swyngedouw 2000; Swyngedouw 2004b) being predominant – and this impacts upon analyses of social action, which might benefit from a more horizontal ontology (Marston et al. 2005).

This work informs this debate in that it shows how access to the field bridges theory and practice in the epistemological-ontological debate about scale. Practically, the layers in the state administration system structured my access and approach to the field. I was required to apply for research permits and introduce myself to the authorities in a top to bottom sequence. This awareness of the administrative hierarchy might well have turned it from an order of spatial levels – apolitical and without agency – into something that recurs in the discourse of the actors. The interviewees all received a copy of my research schedule and could see which other state agencies (and their administrative levels) I had spoken to; it was common for them to deflect questions they did not want to answer by telling me that the other state agency I had spoken to should have had the answers. It is impossible to disentangle the effects in my data: did the administrative levels function as cognitive frames, or were they referred to as a matter of convenience? Marston's critique (2005) that a vertical ontology skews analyses of social action would apply to this conundrum. Certainly, it is not possible to know if the research would have produced a different, less structured view of the field if the administrative hierarchy had not structured my access to the field. Indeed, another researcher might not have reached the same conclusions about the structuring effects of the administrative system with the very same structured access to the field. In this particular work though, scale has been epistemological than ontological, a category of analysis than a category of practice, and this has been strongly influenced by the access to the field.

As such, the true significance of the epistemological-ontological debate must be how it influences observations and the conclusions drawn from them. What are the properties of scale likely to be observed when scale is a category of analysis than a category of practice? Based on the literature, it would seem that employing scale as a category of analysis risks missing the relational nature of scale/space and society, and attributing causality to scalar structures. Yet, in my work, directional causality was difficult to establish. Did the state administration system effect actions and inactions, or did the actors articulate and use the layers of the state administration system to their own ends? Whether it was real or apparent reification seems merely a matter of interpretation. In this regard, the debates about epistemology and ontology do matter because they are clearly cognitive frameworks for the researcher.

This offers a different perspective on why (Western) scholars have been able to extend debates on scale. A horizontal ontology is conceivable when vertically-organised structures are mere artefacts that do not structure or restrict access to fields. But this might also have to do with the theorisation of scale occurring quite independently of empirics. Of the articles discussing the epistemological versus ontological nature of scale research (Brenner 2001; Leitner and Miller 2007; Moore 2008), none drew on empirics. I was not able to identify any works that had managed to employ a horizontal ontology, only those that spoke in its defence (Marston et al 2005). Again, the empirics bring the theorisation to bear.

These critical reflections on the theorisation of scale are based on the nature, and perhaps location, of my field. Theorisation on scale has been challenged for its Western-ness and inapplicability to the Chinese context (Ma 2005; Shen 2007). For instance, the "politics of scale" (Brenner 2001; Delaney and Leitner 1997; Herod 1997;

Miller 1997), or "scalar politics" (MacKinnon 2011) theorises the role of geographical scales as frameworks for a broad range of social activities and struggles. Shen (2007) argues that the Chinese "politics of scale" are different from the Western, because new arrangements of scalar relationships are actively initiated by central and local states, rather than resulting from socio-political struggles.

Even with "epistemological" scale research, the conceptualisation of scales – global-national-local – apparently fails to capture state-local relations in China by subsuming all the sub-national units into "local". Whereas capital and market forces effect scaling processes – which Shen (2007) considers as the hierarchical differentiation and ordering of geographic space – elsewhere, in China, it is the state and its rigid and hierarchical administrative apparatus that has a shaping effect on scale relations. On the other hand, Ma (2005) argues that the opening up of the communist regime have led to the entry and workings of market forces that might shape scaling processes, such that the State and its apparatus are no longer the only agents. Given the similarities in their socio-political organisation, Vietnam, with its state administration system, would also substantiate such a challenge to the Western-ness of theorisation on scale. This work on environmental management is limited in its contribution to this discussion, since I did not find sites of contentious politics. Unlike other issues (e.g. land disputes) where there are explicit socio-spatial strategies – people forming alliances with local cadres – there was no "positive" socio-spatial struggle in this instance, only a "passive" one. Earlier in Section 6.1.3, I also pointed to the disenfranchisement of the sub-provincial authorities I interviewed, and how that diverged from my expectations generated by literature that has enriched our understanding of state-local relations by unpacking the "local" into several administrative layers that were shown to operate with a degree of autonomy. While my own work will not encourage an interpretation of socio-political struggles that "re-scale" and "re-territorialise", other Vietnam scholars have provided empirical accounts of other social issues that show it could be possible to re-conceptualise scale in/for a hierarchically organized state. Thus, this work has pointed to a research gap. Do fundamental differences between Western and non-Western or "communist" state administrative apparatuses exist, such that theorisation on scale is largely irrelevant to the latter?

Finally, my consideration and review of the literature at the interface of scale and environmental governance offered little insight for my empirical topic of industrial wastewater management in a country. Multilevel environmental governance concerns itself with the new modes of governing natural resources after the "rescaling" of the state that was thus far the main actor. This re-scaling involves state functions being redistributed to supranational regional or international institutions, local governments and non-state actors. The focus is on the multiple new sites at which a resource is governed and their constellation. But this sort of drastic change in natural resource governance has been largely limited to transboundary resources. Industrial wastewater management has not experienced such a revolution and still remains in the hands of local governments.

What is or will be interesting is how the politics of scale in environmental governance will be theorised. The "politics of scale" has osmosed, and there have been attempts to articulate how analyses of environmental governance can be made that consider interests and politics over the scale at which decisions are made. There have been little empirical applications, but the few attempts have suffered from the same problems of operationalisation: they either reify scales, or struggle to articulate the scalar aspects of the politics studied.

6.2.3 Places, boundaries, and territoriality

The IZ has been repeatedly conceptualised as a symbol of modernity, by invoking the place meanings given to it by the national and provincial governments as well as the residents. But the most apparent contradiction to this conceptualisation is the IZ's visible lack of success. This is resolved by considering the IZ not just as a place, but also a territory, or an instance of territoriality. While territory is an area that consists of a boundary, the inside and the outside; territoriality is the attempt to exert control, influence, or affect people, things, or relationships in a geographical area (Sack 1986). Territoriality thus takes our attention away from the IZ as a bounded place or territory, towards the relationship between those establishing the IZ and those displaced by it. Sack theorised that territoriality can conceptually separate space from things and recombine them either by assigning things to a place or places to things. Without actual content, socially-empty places become concepts. This is at the heart of how the IZ retains its symbolism. It is not about the IZ and its appearance or contents, but what the IZ represents: the power of the state to convert certain areas to achieve its aims and plans even if these visions are not shared by the people it displaces. Another perspective that Sack's theory of human territoriality offers is that the representation of the territory itself (i.e. the idea of the IZ) becomes powerful, because the act of territorialisation asserts and reifies power, and displaces attention away from the nature of the relationship or exercised power, towards the territory. The IZ's retention of its symbolism is enabled through the government being in the position of power to decide on its symbolic meaning, and reproduce such areas for industrial production and "industrialisation and modernisation" throughout Vietnam, and the IZ then distracting from and preventing questioning of this power of the government to territorialise.

Although the theory of territoriality provides an important supplement to the theorisation on territory, by looking at the relationship underpinning the area, it reaches its limits with the materiality of the area. I had tried to theorise the negotiation of operational boundaries of the state agencies involved in industrial wastewater management as examples of operational territory. But I had to revert to the concept of boundaries, which allows for a more social constructivist take. To the extent that the theorisation on territory and territoriality already engaged with the idea of jurisdiction and expanded on the experiential element, operational territories or immaterial territories might be a direction for further theorisation.

I also considered territory as an important supplement in applying the theorisation on the politics of scale to the Vietnamese, non-Western context. Because the politics of scale has been predominantly theorised by Western academics using examples from a Western context, social conflict and struggle has been a key element. But I found this to be missing in my empirical material, as did other Chinese scholars seeking to understand the politics of scale in China. (I ultimately deem it an open question as to whether the government levels in the Vietnamese state administrative system are scales, and if instances of "level-skipping" constituted re-scaling, for fear of forcing an empirical-theoretical fit.) But, physical territory mediates between scale and actors in the Vietnamese administrative system, because every level of government is also matched to a physical area, and every state agency has a physical area to administer. These scales and territories are not fixed: the number of administrative units (provinces as well as districts) varies from year to year in Vietnam (Waibel 2010:24). The same territory could be a district one day and a province the next year (as in the case of Hau Giang). This shows how "re-scaling" does not result from socio-political struggles but is initiated by the central and local state, and how scalar processes in Vietnam are quite

different from the Western context. It also shows how territory and what is in it or will be given to it is vital to attempts to re-scale. The state agencies as well need territory, and this partly explains why the IZMBs are so keen on establishing more IZs.

6.2.4 Multi-dimensional socio-spatial approach

This analysis has engaged several socio-spatial dimensions to explain these instances of environmental management. It considered the meaning-making of the industrial zone (place), the operational boundaries of involved state agencies (territory), and the state administrative system (scale). The underlying rationale is that the regulation object of any environmental management system is a place which falls within or between administrative territories as well as the operational ones from involved organisations. A place is also usually ascribed to a specific scale of governance, and these scales can both structure the application of the environmental management system as well as become structured by it. While this analysis did not explicitly set out to be an empirical application of the polymorphic approach to socio-spatial relations, the results of this analysis allow reflections on discussions of "multi-dimensionality".

Table 17: The TPSN Framework by Jessop et al (2008)

Structuring principle	**Fields of operation**			
	Territory	**Place**	**Scale**	**Networks**
Territory	Past, present, and emergent frontiers, borders, boundaries	Distinct places in a given territory	Multilevel government	Interstate systems, state alliances, multi-area government
Place	Core-periphery, borderlands, empires, neomedievalism	Locales, milieux, cities, sites, regions, localities, globalities	Division of labour linked to differently scaled places	Local/urban governance, partnerships
Scale	Scalar division of political power (unitary state, federal state, etc)	Scale as area rather than level (local through to global), spatial division of labour (Russian doll)	Vertical ontology based on nested or tangled hierarchies	Parallel power networks, non-governmental international regimes
Networks	Origin-edge, ripple effects (radiation), stretching and folding, crossborder region, interstate system	Global city networks, polynucleated cities, intermeshed sites	Flat ontology with multiple, ascalar entry points	Networks of networks, spaces of flow, rhizome

Source: Jessop et al 2008:395

The limitations of exploring only one aspect of socio-spatial relations have motivated work on polymorphic approaches (Bulkeley 2005; Leitner and Miller 2007; Paasi 2004; Pierce et al. 2011; Sheppard 2002; Swyngedouw 2004a). Jessop et al (2008) concretised the calls for a polymorphic spatial approach with their proposed "TPSN framework", in which they recognised territory (T), place (P), scale (S), and network (N) as the four main spatial dimensions that must be engaged with, not individually and separately, but using each as a structuring principle to study the other as a field of operation. Table 17 ("The TPSN Framework by Jessop et al (2008)") presents their proposal to overcome one-dimensionalism. Several scholars responded sceptically. To begin with, why four dimensions and not more, and why these four dimensions (Casey et al. 2008)? Second, the incongruence between the working assumptions underpinning each spatial form has never been worked out (Mayer 2008:418). Third, the TPSN framework presumes that a theory should explain more, and that more is better (Shapiro 2008) but this comes at the price of being robust, because where then would the line be drawn (Mayer 2008:416)? Fourth, as a

socio-spatial theory, it is structuralist (Mayer 2008:418) and overlooks precisely the spatial conflicts and spatial strategies it seeks to explain, by reifying spatial dimensions rather than looking at the actors and their social practices and processes (Mayer 2008:416), essentially preferring the spatial over the social (Paasi 2008). Paasi (2008) hence proposed that the TPSN framework would best be understood as heuristic, so that researchers can draw from the concrete social world to conceptualise and give the spatial categories theoretical content.

Since there have been no empirical applications of the TPSN framework, it is hard to assess the weight of the criticisms, which centre on the implications of such a structuralist and empiricist framework for studying actual spatial practices, struggles, and strategies. In fact, empirical applications of a multi-dimensional approach to socio-spatiality are scarce. Before the TPSN framework was suggested, Leitner et al (2008) drew from the immigrant workers' freedom ride in the United States, an instance of contentious politics, and argued that participants in contentious politics frequently draw on several spatialities – scale, place, networks, positionality, and mobility – such that no single spatiality ought to be privileged in socio-spatial analyses. Post-TPSN, Jones et al (2013) took a very different approach, and thereby make an important contribution to the methodological challenges of polymorphic socio-spatial analysis. They introduced the term "patch" – as a spatial metaphor that encompasses several spatialities and avoids the spatial tropes of geographers' vocabulary – in their interviews with Welsh local government actors, to capture individual accounts of lived socio-spatiality in its material and imagined forms. This is not exactly what was contemplated by the authors of the TPSN in their proposal for multidimensional socio-spatial analyses: they envisaged the TPSN schema being used "to decipher the strategies and tactics of individual and collective agents, organisations, and institutions that are engaged in contentious politics, as they perceive them as participants"[163] (Jessop et al. 2008:398). The work of Jones et al (2013) accepted the challenge of multidimensionality, but avoided the structuralist approach of the TPSN that was criticised by Shapiro (2008) and Paasi (2008). Otherwise, engagements with spatialities have been limited to two (Bulkeley 2005; Nicholls 2009; Paasi 2004; Pierce et al. 2011).

The empirical applications of polymorphic and multi-dimensional analyses of socio-spatiality above, and my own work, show the weaknesses – and yet also insights – of the TPSN framework. First, the TPSN framework is totalising, and clumsy and awkward for it. Table 17 ("The TPSN Framework by Jessop et al (2008)") shows all the possible aspects that can be covered if one wished to take their call to arms seriously. Shapiro's critique rings loud (2008): more is not necessarily better. Works that employed lesser spatial dimensions (Nicholls 2009; Pierce et al. 2011) were not less descriptive or insightful of socio-spatiality. In my work, which did not apply the TPSN, or its proposed research strategy of considering four different structuring principles on four different fields of operation, the analysis of three spatial aspects of one issue without considering their structuring each other was a sizeable undertaking. While considering the applicability of the TPSN framework to my work, I found that it forces one to "find spatialities". The idea of analysing a spatial element in itself, and then structuring another spatial element, and then being structured by another spatial element (Jessop et al. 2008:396), in order to avoid "spatial fetishism"

[163] Jessop et al considered that the TSPN could have at least three applications: "to classify different social-scientific accounts of contentious politics...to decipher the strategies and tactics of individual and collective agents, organisations, and institutions that are engaged in contentious politics, as they perceive them as participants...to pose new questions regarding the interplay between the spaces of contentious politics and the geohistorical periodisation of capital accumulation and state power." (2008:398)

(Jessop et al. 2008:392; Sayer 1989) could only backfire either by confirming through intentionally searching for space (Mayer 2008), or by inviting critiques of not elucidating concrete causal mechanisms. Second, the approach taken by Jones et al (2013), and the earlier work of Leitner et al (2008), does support the critiques that the structuralist TSPN imposes spatial categories rather than facilitates the exploration of and induction from individual accounts of socio-spatiality. My work produced similar results: without collecting data with the explicit aim of studying socio-spatiality, my data revealed socio-spatialities. Why then is it necessary to impose four specific spatial categories onto an unstudied field if one were keen on exploring lived socio-spatialities? Yet, the TPSN authors correctly articulated what the other scholars working with more than one spatial dimension did not: one-dimensionalism falls into the trap of conflating a part (territory, place, scale, or network) with the whole (of socio-spatial organisation) (Jessop et al. 2008:391). Insofar, the one lesson of the TPSN framework is the overdue recognition of the multidimensionality of socio-spatial struggles.

This empirical account of wastewater management in the industrial zones of the Mekong Delta confirms that, even in a case of non-contentious, usual, day-to-day politics, the actors involved in implementation engage several spatial dimensions in defining or redefining their work. Because I did not set about data collection with the explicit aim of discovering the actors' spatial practices and strategies, this work also presents an alternative methodology to polymorphic socio-spatial analysis. Rather than applying predefined and preconceived spatial categories as per Jessop et al (2008), or using a spatial metaphor that avoids the geographical tropes as per Jones et al (2013) in interview, an alternative is to use an institutional analysis framework as a heuristic. I presented my arguments in Section 6.1.3 about the suitability and inherent spatiality of the IAD. This inherent spatiality of the IAD which I identified could also be considered preconceived spatial categories, according to the critics of the TPSN. But the IAD does explicitly avoid spatial categories, and it imposes categories looking for actions, action arenas, and motivation for acting. Moreover, to achieve a socio-spatial analysis without any preconceived spatial notions appears to be a theoretical musing that is hard to empirically implement and operationalise, given the subjectivity of researchers. As a data collection, not analysis, tool, an institutional analysis confers the advantage of avoiding explicitly spatial tropes and imposing it on the data collection process.

6.2.5 Legal geography

The theoretical significance of this work for legal geography was discussed in detail in Section 5.3.3, and this section will provide a summary. As an application of legal geography outside of the Anglo-Saxon common law territories, the Vietnamese conception of law poses several challenges. Rather than a mere law-space nexus, the utilisation of law for Party policy means that it is a law-state-space nexus that must be explored. Legal geography is a constructivist and critical project, and does not explicitly theorise on the state-law or state-space nexus. Thus, it is ill-equipped to provide insights on the Vietnamese condition of unimplementability and legal ambiguity as a governing technology, and what this means for space. The second challenge goes to methods. There are less discursive sites for analyses of constructions of law and space in Vietnam: environmental litigation does not exist, the majority of Vietnamese laws deal with state economic management, and party policy is also considered law. The persistent and prevalent implementation gap also raises the question of whether the written law is an appropriate or sufficient discursive site. Hence, this work drew from the contents of regulatory documents and implementation strategies of bureaucrats, thereby providing an alternative to the typical case rulings which legal

geographers engage with. Third, the law-space nexus in legal geography invariably refers to sites and places, and the political spatial expressions of the Vietnamese state in the form of the state administrative structure and its layers thus expands the meaning of "space" in legal geography.

On one hand, this implies that the results of my analysis are idiographic. But legal geographic analysis has critical and constructivist roots, and the positivist requirement of nomothesis is antithetic. On the other hand, this non-Western instance of legal geographic analysis confirms what the Western instances have been demonstrating in studying the location of law, its effects at the location, and the enabling or constraining effects of that location on the law. Law and space are inter-related, in that law shapes space boundaries and places, and these places and boundaries in turn affect how law is applied. It also demonstrates that an analysis of legal regulations does not necessarily have to be legalistic, and can be socio-spatial by considering the construction of place meanings and institutional structures, such that legal geography can be a useful supplement to studying environmental management.

6.3 Generalising this work

This has been an idiographic work. The findings about wastewater management structures in the IZs of the Mekong Delta are spatially and temporally limited: the Mekong Delta as a region is largely agricultural, infrastructure development and foreign investment rates are low, and the IZs are only in their start phase. There are thus limitations to scaling up the results for Vietnam, or the Southeast Asian region in general, since the other Mekong riparian countries have different political and administrative systems, and different regions within Vietnam have different biophysical and economic characteristics. But, this work also makes clear statements for the general problems of regional development in a developing country, the balancing act between the economy and the environment, environmental governance fixes, the issue of spatial fit, law as a mode of spatial organisation, and the problem of dichotomous analytical binaries.

At its heart, this work is about the old tension between environment and economic growth. Its first contribution to the body of work on environment versus economy is the interaction of economic success models and environmental protection imperatives. The industrial zone, having launched the economies of several transiting countries (Tsuji et al. 2007), can be seen as a global success model. In its implementation, they are "forbidden cities" of the industrial state: the physical markers of fences, entry gantries and entry permits, and the metaphorical markers of new special management agencies. This reputational baggage the IZ brought along with it became an obstacle to environmental protection in its new location. Its introduction into the rural Mekong Delta became a tale of the emperor's new clothes: the IZs were perceived as symbols of economic growth, progress and modernity, but they also exposed the lack of economic activity. Yet, its necessity for economic growth and as industrial policy was unquestioned, and its environmental effects ignored. The same trajectory can be observed with the paradigms of liberalisation and privatisation in Vietnam. Even environmental services provision is expected to reform along these lines. Private actors would increase competition and delivery, than if there were only one state provider of environmental services. The example of provinces devising "non-business units with revenue sources" to stand in

for the missing private actors for infrastructure development show how there is a lack of criticality about the suitability of privatisation. The industrial zones of the Mekong Delta and their inability to provide proper infrastructure for attracting investors and treating the production waste streams are thus a cautionary tale about development models.

This work also contextualises the environment-economy tension in agricultural rural areas, for which the Mekong Delta is an excellent proxy. The Delta brings our attention to industrialisation projects in an agricultural rurality. The industrial projects drawn towards the Delta are of a "light" nature and capitalise on the abundant resources there, such as aquatic product and agricultural product processing. These are not the industrial plants likely to stand out for egregious pollution. The economy-environment tension exists, but it is not stark. Although this might explain the current oversight, it also calls for more attention to be directed towards rural industrialisation projects in agricultural regions, because of the missing perceptions of severity despite the effects of cumulative pollution on land productivity, food yield (Huynh Viet Khai 2011), food safety and human health (Behera and Reddy 2002). Even though, and precisely because IZs are so rare in the Mekong Delta, it is important to think about environmental protection.

There has an osmosis of principles across the apparent economy-environment divide implicit in this debate. Economic instruments have been employed to improve the delivery of environmental services. And it seems environmental principles have also osmosed, with sustainability infusing economic discussions. But, the fundamental difference, based on this empirical case, is that economic paradigms are implementation-friendly while environmental paradigms are less so. Economic instruments – wastewater discharge fees, environmental taxes, privatisation of pollution control infrastructure – have not worked optimally because of missing functioning markets. The provinces have had to step in to simulate such a market with their public-private hybrids for infrastructure development; the high interest rates are prohibitive and no credit can be found for construction of the CWWTPs; and the IZs have failed to attract investors who are ultimately the beneficiaries and funding sources for environmental protection infrastructure. On the other hand, the rationale of the EIA, a bastion of sustainability thinking, appears to be understood; but the EIA remains a procedural than a content requirement in planning. The case of the IZs in the Mekong Delta affirms that economic instruments are end-of-pipe and easier to implement than preventive instruments for sustainability. This – the theoretical nature of the preventive stage – might suggest that more attention be placed on improving end-of-pipe portion (discharge permits, discharge fees, complaints, inspections, checks), which is unfortunately hampered by low to no implementation. Yet, although economic efficiency in environmental protection is a paradigm with a well-developed tool kit, it can only deliver its benefits if there are functioning markets, and this is reason to reconsider the introduction of market-based instruments in areas marked by low economic dynamism or participation of private actors.

The second contribution is a critical look at the political economy of packaging and prescribing solutions for improving environmental governance. Regulatory instruments and changes, decentralisation, privatisation and marketisation, capacity building for monitoring and enforcement, public participation and non-state regulation as an alternative to monitoring and enforcement, and clean(er) technologies are the typical components of this prescription package. Throughout this work, I have consistently argued that the classical triad of capacity-financing-regulation has been the common scapegoat identified everywhere. The problems with economic

instruments as solutions have been touched upon above. As to capacity issues, structural features of the Vietnamese state provide a better understanding (see Section 6.1.3). As for capacity training, research sceptical of international and development organisations and their agendas has pointed to the political economy of their assistance programmes that limits their spatial and temporal efficacy. The examples from the Mekong Delta confirm that assistance programmes are welcomed for their promise of fresh funds or technology gifts, but that their existence does not necessarily indicate substantial change. The VPEG[164] had selected partner institutions that restricted the spread of its programme message (*Interview: Soc Trang EPA, 04.11.11*). Even the WISDOM project, which financed this research and for which this research was intended, too did not leave substantial operational infrastructure behind after six years. The lack of continuity attests to limited institutional reform and change. It has been observed that the establishment of special-purpose consortiums to satisfy donor agendas (Molle and Hoanh 2009) are limited in their ability to effect change after the departure of international donor organisations because of missing funds (Waibel 2010). This empirical account provides an alternative perspective: there is a more fundamental issue of diagnosis-oriented analysis that inherently downplays and overlooks context.

One fine example of this is the call for decentralisation in environmental governance reforms. This has been the subject matter of works theorising on the implications of scale for environmental governance, or multilevel environmental governance, which entails "scalar reconfiguration of state power in favour of regionalisation and localisation....the diffusion of power to state, market, and civil society actors at local, national, regional, and global scales" (Hariss et al 2004:2 cited in Batterbury and Fernando 2006:1854). Decentralisation, or the localisation of environmental governance, where the local level is the (new) preferred site of environmental policy-making (Gibbs and Jonas 2000), has been widely studied in various contexts (Castree 2004, Raco and Flint 2001, Rockloff and Moore 2006), but also criticised for its normative slant (Newig and Fritsch 2009). New governance regimes can alter the range of powers and capabilities of state and civil society actors, in ways that that are at odds with the goals of good governance, and in ways that neglect natural resource issues (Batterbury and Fernando 2006). This is affirmed by this empirical account, which raises doubt as to whether local is indeed better. To begin with, conferring local authorities with the right to set their own policy priorities contrasts with the real nature of policy design and implementation in Vietnam. Even though Vietnam is characterised as undergoing decentralisation and the Government of Vietnam is designing and deigning it to happen (Painter 2005; Vasavakul 1999), top-down planning of Socialist origins persist, leading to tension between local culture and central policies. Resource management in Vietnam displays this sort of dynamic (Clement and Amezaga 2008; Ohlsson et al. 2005): even when it is explicitly imagined to be more participatory and bottom-up, policies are designed and implemented in a top-down "Leninist" manner (Waibel et al. 2012:185). The contribution of local governmental autonomy towards resource management is limited to prioritisation amongst its many other policy objectives. The provincial budget allocation for environmental protection is telling: only four provinces can account for and clarify their budgets (VietNam Net Bridge 27.09.11). External donor-auditors' policy prescriptions, such as decentralisation and environmental economic instruments, have a dubious effect on the balancing act of economy and environment in

[164] See Section 4.4.2

places with "non-textbook" market and political conditions, like the Mekong Delta, and this comes from their generalising and prescriptive nature that overlooks context.

Another example of how context ought to matter for prescriptions is the notion of law and nature of law-making in Vietnam. Based on the observations about the instrumentalisation of law for party policy, the nature of the legislative model (Section 5.1), and the semantics of responsibility (Section 5.2), this work has suggested that legal ambiguity is a governing technology in Vietnam. This sharply contrasts with the implicit assumption of regulatory improvement, which is that legal certainty is the goal. Regulatory responsiveness in the case of Vietnam has actually led to frequency in rule change, and thus room for bureaucratic discretion. Thus, this work cautions against seeing law as a prescriptive cure. Instead, it suggests that the notion and nature of law be properly considered. In Vietnam, law acts as command prompts from the structure to the executing agents. Environmental regulations that emphasise form over content communicate a certain message about the nature of environmental protection. The limited purchase of preventive measures and community participation, whether in the EIA or in the complaint mechanism, might be seen as a problem common to all developing countries with limited environmental awareness. But it could also be seen as a product of law as a discursive site about the environment which shapes the perceptions of the agents.

Another way of analysing the legal framework is to proceed from the premise that another function of law is spatial organisation. Law provides for the political spatial arrangement of the state apparatus. It spatially organises in the sense of categorising places and the disparate people and interests within them as units. It can also communicate social meanings of places. The incompatibility of the IZ with the administration at its physical location affected community regulation. The relevance of this for other countries is that socio-spatial relations matter for environmental management, and an analysis of the law or relevant legal regulations can provide an insight into these dynamics.

Thus, this work would also fall under the scholarship on spatial fit issues (Pohl et al. 2013; Sims and Finnoff 2012). The clearest example is the industrial zone, whose extra-locality was enforced by its management structure which carved it out from its physical location and placed it at a higher administrative level. The Vietnamese industrial zone thus warns against creating management entities incompatible with the administration structure, for the purposes of easier management, since that can backfire by creating inconsistencies between organisations, and give rise to conflicts of interests when one entity is charged with two contradictory tasks. More importantly, spatially incompatible management structures are also part of a discursive distinction. The symbolism of the IZ was clearly facilitated by its extra-locality.

The identification of socio-spatial factors in this exploration of the "context" also alerts us to the blinders that theoretical orientations might impose. Guelke's critical perspective on human geography is analogous:

> "Many factors underlie human geographical activity – political, social, cultural, environmental and spatial. The attempt to restrict geographers to the spatial element alone made it impossible for geographers to explain the real world, and, still worse, channelled the explanations they gave to a single factor. 'Spatialism' was in this respect similar to environmentalism. The environmentalists sought to account to human activities in terms of environment, the spatialists sought to do the same with distance. In both cases, the results have been disappointing." (Guelke 1977:383)

Guelke's warning has general applicability to all theoretically-oriented analyses which privilege one set of factors over others.

Some of the findings also call for a reflection on the use of dichotomous binaries in conceptual vocabulary. The binaries of formal/informal, state/society, legal/illegal, and public/private have posed difficulties for this analysis of environmental management in a hybrid creature. Vietnam is Socialist and liberalising, a „transitional economy" that focuses on generating formal regularity through legislative bulk and yet also characterised by informality and uncertainty, an absence of monolithic entities, and blurred boundaries between public and private. Binaries project boundaries and delimitation between the opposites, whereas reality is of a less black-and-white and a more indistinct nature. An example of how the public-private binary provides incomplete descriptions are the infrastructure developers, consultancies owned by the ministries, and equitised state-owned enterprises. There is also implicit normativity in conceptual vocabulary: rule of law connotes certainty for transactions, and uncertainty is a manifestation of missing rule of law. Thus, the tendency for binaries to be dichotomous obstructs perception. I was only able to conceptualise ambiguity as a governing technology with my field observations and content analysis of the legal framework, based on Gainsborough's (2005) observation that set aside the normative binary associated with the rule of law. Sayer's (1989) admonishment against conceptual dichotomies and dualistic thinking should thus be taken more seriously. The rigidity of the administrative structure and the fluidity of operational boundaries of the state agencies seemed contradictory, but I argued that they are merely two sides of one coin. Similarly, legal ambiguity in application appeared contradictory with the tendency of the regulatory documents towards an idealistic situation, but the former is a necessary element of the latter since there is no regulation that covers all situations. These perspectives are not enabled by dichotomous binaries, which can cause perception bias.

6.4 Limitations of this work and directions for further research

Several limitations of this work stem from the limitations of the field. There were three main hindrances to data collection. The first is the language barrier. Even though I trained my research assistant, nuances were necessarily lost in translation. What I jotted down from the translation in my notebook was also the only data I had, since my interviewees did not consent to voice recordings. The second is the control over the interview process, and the reliability of "state"-approbated interviewees. As mentioned in Chapter 1, I had to apply for an interview permit, stating the contents of my interview questions. The interviewees were chosen for me on this basis. But, instead of the person with the expertise and knowledge, this sometimes meant the only person who had time was appointed to deflect my probing questions since my research subject was often considered to be a sensitive topic. It was not easy to determine if the negative answers were related to my question falling outside of his area of work and competence, or if they were true negatives. When permission was not granted, it was also not possible to attribute the negative. Did the university, the department of internal affairs, or the intended interviewee refuse the interview? Additionally, in household interviews, direction by the local authorities cannot be precluded. It is plausible that my observation of incapacitated neighbouring communities was the view that the local authorities had intended for me to have. The third is the limited access to actors. The "sensitive nature of the research", a phrase often repeated

to me, meant that I was strongly advised not to use research methods like surveys or group discussions, or to approach state-owned enterprises operating in the IZs.

The main challenge posed by these data collection obstacles is the extent of their influence on perception, and the question of subjectivity in qualitative analysis. The act of interpretation is implicit in findings: data-filtering is inherent to the process of semi-structured interviewing. Certainly, the participation of the state apparatus in directing my field research conferred an element of conspiracy and hint of cover-up, even if this might not have been the case or intention. The element of subjectivity was dealt with by wider contextualisation and triangulation. Using the IAD Framework directed me to look at all relevant decision-making processes that could impact on how wastewater was managed such that even seemingly oblique matters such as site-planning of IZs were relevant. This wider contextualisation prevented a narrow interpretation based on interview data directly connected to monitoring and enforcement of wastewater pollution. Triangulation, the seeking and use of data from other non-interview sources, provided data that was not collected, recorded, and interpreted by me. An important alternative data source was the media. Although the influence of its proximity to the state on its portrayal of environmental pollution is difficult to determine, I managed to collect about 90 articles in the period 2009-2012, from the online English archives of Tuoi Tre, VietNam Net Bridge, Viet Nam News, Saigon Times, Thanh Nien News, MoNRE, and VEA. There are certainly more articles in Vietnamese.

The second challenge is the difficulty in acquiring an actor-oriented perspective. With the exception of a few who subsequently became informants with whom I had non-state-approved contact, I had access to state agencies, rather than actors. Because of limited access to factories in the industrial zones, there was limited insight into the internal structure of an action arena, in the application of the IAD as a heuristic tool. What was presented here as their perspective was provided by those from environmental consultancies and development assistance projects that worked with the polluters. On the other hand, it is not clear if interviews would necessarily present new data, as the few factories I had permission to work with had also, understandably, made an effort to portray the environmental management systems in a most positive manner (*Interview: Saigon Beer Company, Can Tho, 22.12.11*). Related to this difficulty in acquiring an actor-oriented perspective is the legally-regulated nature of wastewater management in industrial zones. Because the rules of the game were legally-established, it introduced a slant and focus on omissions and violations. "Illegality mobilises bias and emphasises state power and governmental actors," (Cooper 1996:274) and the challenge for any future research on wastewater management in Vietnam is to go beyond the state-oriented analysis, while recognising that Vietnam scholars are divided between the Vietnamese state being strong and dominant leaving little space for society, and the Vietnamese state structures being prevalent but also ineffective and hence weak (Koh 2001a).

The representativeness of this data for Vietnam as a whole would be contestable on the basis that the Mekong Delta as a region has a very different economic profile than the rest of the country, such that several findings linked to this limited economic diversity might not hold true for the whole of Vietnam. For instance, the Southeast and the Northeast are the economic poles, and the different economic and physical conditions in these regions of Vietnam might mean a different political economy of wastewater management. The industrial zones of Ho Chi Minh City, for instance, were the ones that pioneered the adoption of industrial clusters as a policy tool; their success and more severe pollution has also given the management board more power to deal with investor-

polluters (*Interviews: HEPZA, 12.01.12; Tan Thuan Export Processing Zone Management Board, Ho Chi Minh City, 12.01.12*). Thus, the data on which these findings are based is temporally and spatially limited to the Mekong Delta between 2010 and 2012. Clearly, a comparison of industrial zones across the country would be more representative for this work's statements about the structuring effects of the state administrative system, the social and symbolic meanings and spatial incompatibility of the industrial zones, and the role of the law in expressing and facilitating these hierarchy, meanings, and ambiguous operational boundaries.

The following data could also substantiate and strengthen the arguments presented in this work. Insofar, they are directions for further research:

(i) The political economy of environmental protection would provide valuable insights into the financing factor to which poor monitoring and enforcement is usually attributed. The missing financial incentive structure for industrial producers to construct waste management facilities was often asserted, but it is not clear who or where the sources of resistance towards changing the sanction system are. The efficiency of economic instruments for environmental protection also calls for an examination of how much wastewater and environmental fees are collected, and how they have been used. Finally, the financial budget and alternative sources of funding for monitoring and enforcement activities, and how they are disbursed, could explain the incentive structures for the state agencies.

(ii) The environmental protection discourse emanating from the central government, as expressed in training courses for the state agencies, would bolster my arguments about the nature and philosophy of environmental protection, which was based on the content analysis of the regulatory documents (Section 5.2.2). It could explain the behaviour of the interviewees from state agencies, such as their stress on "the law", their focus on procedure and form, or their reliance on "coordination", which all pointed to how environmental protection is more about procedural compliance than substantive improvement. Related to this is the severe gap in knowledge on environmental law in Vietnam. Most legal research focus on adoption of economic laws and the challenge to the underlying socialist thought. The history of its adoption might yield insights into its tendency to idealise.

(iii) The social in the "socio-spatial" findings of this work could benefit from a deeper exploration of "extra-structure" "non-state"[165] actors' perspectives, and networks. The media, the environmental police, environmental advocacy groups, and the environmental consultancies had been identified in the work, but their perspectives were only partially explored. "Networks" was another element of the TPSN polymorphic spatial analytical framework that this work could not adequately capture given time limitations. Previous work on social capital (Genschick 2013), strategic groups (Evers and Benedikter 2009), and informality (Malesky and Taussig 2008; Steer and Sen 2010; Tenev et al. 2003) shows that this is a research direction to be followed up on. A specific question would be whether proximity between a state-owned enterprises and its state manager actually hampers monitoring and enforcement.

(iv) The coherent accounts across all field sites about how the bottom-up complaint mechanism hindered its relay, reception, and reaction raises the question of why there was no public outrage or action. Some

[165] To that extent that the Vietnamese state has been observed as being ominent (Gainsborough 2009 "May the state please stand up"), "non-state" entities are just not explicitly affiliated with the state.

hypotheses had been assembled in Section 6.1.3. More importantly, what are the effects of this for grassroots activism for environmental protection in the South?

(v) The conditions under which legal ambiguity is a constraint and the conditions under which it is a resource, in other fields of environmental protection, would help elaborate my thesis of legal ambiguity as a governing technology.

(vi) The smaller industrial parks have a different management structure: they are to be managed by the district authorities, but still have a private infrastructure developer company. Does the lack of a spatial incompatibility between physical existence and administration, such as in the case of the IZ, then aid environmental management in the industrial parks? The industrial parks were also planned with the explicit purpose of housing the relocated polluting enterprises. Is this purpose met or are sustainability-based policy objectives second-tier priorities, just as in the case of the zoning function of the industrial zone? This would say more about the sustainability versus the modernist visions of Vietnamese rural industrialisation projects.

6.5 Conclusion

The idiographic nature of this work is due to the research objective of contextualisation, but the characteristics of the subject of enquiry also allows general statements to be made about the balancing act between environmental protection and economic development, rural and regional development, prescriptive fixes for environmental governance, and the analytical challenges of employing dichotomous binaries. The work concurs with general development dilemmas. There is no silver bullet for rural industrialisation, and the unquestioned implementation of economic success models might ironically prejudice development, either by decreasing environmental quality and livelihood stability of the resettled and displaced, or through the diversion of state funds from other purposes because of the missing framework conditions. The same goes for the adoption of economic principles for environmental protection. Economic tools for environmental protection might be implementation-friendly, but ultimately, their success depends on the presence of a functioning market, and this cannot be presumed. The lesser intensity of rural industrialisation, as well as rural population density, also appears to lead to the tendency to downplay pollution-related environmental effects and delay action for reaction. The development assistance programs for development and environment-related issues in the provinces surveyed also show limited long-lasting change and effects, which suggests that diagnosis-oriented analysis tends to overlook context, since reduction is a prerequisite of prescription, and the incompatibility with the structures and practices of the Vietnamese state is a cause of their limited impact.

This reductionist generalisability of previous analyses of environmental management failures was the motivation of this research. Particularly, in contrast to literature on Vietnam, literature on environmental management in Vietnam provided relatively a-contextual, a-political explanations. The unique Vietnamese context of a transitional economy, the features of the state apparatus, the contrast between central-planning mixed with limited decentralisation and local autonomy and defiance, as well as the ominence of the State, did not feature in the discussions on environmental management in Vietnam. Instead, capacity limitations of the agencies in charge of monitoring and enforcement, weak regulatory frameworks marked by gaps and overlaps, and a lack of economic

incentives were the commonly-offered answers. Thus, this work asked, "what is the state of wastewater management in the industrial zones of the Vietnamese Mekong Delta, and are there more contextualised alternatives to the common explanatory narrative of capacity, financing, and legal issues?" with the explicit goal of exploring the Vietnamese context. There were no working hypotheses, and the objective was to work inductively. Since the literature on environmental management in Vietnam variously referred to institutional failures and fragmentation, the institutional set-up was the empirical starting point. The Institutional Analysis and Development (IAD) Framework developed by Ostrom (1998) was chosen as a heuristic device – rather than as a theoretical framework – since it cast a wide net in considering multiple levels of decision-making, formal and informal rules and strategies, and contextual setting like community attributes and biophysical and material conditions.

While the triad of poor capacity, financing, and regulation remains a correct diagnosis, my data shows previously neglected socio-spatial aspects, such as the social and symbolic meanings and spatial incompatibility of the industrial zone, the structuring effects of the state administration system, and the role of law in expressing and facilitating these hierarchy, meanings, and operational boundaries. The layered place meanings of the industrial zone arise from its nationwide deployment as a policy tool for industrialising (symbol of modernity and progress), the management structures which carve it out from administration at its physical location (extra-locality), and the residents' association of the industrial zone with a promise of improved non-farm-based livelihoods. The state administrative system is more than an organisational artefact, and exercises organising power both vertically and horizontally. Residents were aware that they were at the bottom of the hierarchy; bureaucrats and state agencies demonstrated clearly that they had higher-ups to report to, and equals within the same administrative layer that they had to coordinate with. These place-meanings, extra-local management structures, hierarchical relations, and organisational operational boundaries were expressed by the law. Rather than legal certainty providing clear guidelines for the resolution of operational overlaps, legal ambiguity was a resource for state agencies. Law communicates between the state administration as structure and the state administration as executor, by exerting socio-spatial organising effects, and then adapting to the influence of these socio-spatial effects by adopting ambiguity.

This work also highlights a theorisation gap with respect to the non-Western countries, in both the field of legal geography and the debates about scale. Legal geographers explore the law-space nexus, and thus provide little theoretical insights into the state-law-space nexus in the case of Vietnam, where state and law are not conceptually distinct. Moreover, the constructivist roots of legal geography presume a state that is powerful and uses law as a discursive site to influence and shape perceptions; it is not clear if, and to what extent, such a state exists in Vietnam. Moving on, the integration of the state into its theorisation could be more explicit. Similarly, scale has either been conceptualised ontologically as frameworks for social activities and struggle, or epistemologically as a hierarchy of global-national-local. Both fail to capture state-local relations in a non-Western context, where the administrative hierarchy is relatively rigid and consists of more layers between centre and local, and socio-political struggles over space are not necessarily initiated by society, but, sometimes, by the arms of the state apparatus.

The thread of socio-spatiality that runs through the empirical data also demonstrated how the interface between space and environmental governance is not mono-, but rather multi-dimensional. No single socio-spatial concept

could have provided a satisfactory account. In fact, the contradictions between theory and empirics could often be resolved by calling upon another socio-spatial concept. The industrial zone retained its *place* meanings of being a symbol of modernity, despite its objective failure to achieve industrialisation, because the state had successfully exercised *territoriality* in the way it reproduced these spaces for industrial policy and the mission of industrialisation, such that the (missing) contents of these places were conceptually separate from these spaces, and the representation of these industrial zones assumed a certain power and "unquestionability". Another example is how *territory* is an important supplement to *scale* in the Vietnamese state administrative hierarchy. Even though the governmental levels demonstrated a clear cognitive effect by "framing" state bureaucrats' justifications of their actions and inactions, it was unclear if the Vietnamese governmental levels could be conceptualised as "scales" in the radical geographic sense since they were neither created nor contested by social struggle. However, every government level and state agencies at that level are matched to a physical area, and the appending of territory created "scales" by creating contestation over operational areas and boundaries. The inter-relatedness of the three socio-spatial concepts of place, territory, and scale, in this work corresponds to recent calls to theorise socio-spatial relations in a multi-dimensional manner that does not privilege one socio-spatial aspect over the others.

In successfully applying the IAD Framework as a heuristic – and not theoretical – tool to explore the context of an environmental management problem, and uncovering the explanatory power of the socio-spatiality of such a problem, this work suggests that the IAD could be used for multi-dimensional socio-spatialised analyses. The debate on multi-dimensional socio-spatiality reveals concern about the empirical operationalisation of a multi-dimensional socio-spatial analysis: the application of preconceived spatial categories might act as a blinder, missing the socio-spatial strategies of actors, and reifying the spatial categories employed. The IAD Framework provides a way forward, because it does not use any explicitly socio-spatial analytical categories, but still directs attention to socio-spatial conditions through its emphasis on place-based characteristics with the categories of biophysical and material conditions and community attributes, as well as scalar effects with its multi-level analysis. The rediscovery of the socio-spatiality of wastewater management underpins this work's call to socio-spatialise analyses of environmental management problems, engaging multiple socio-spatial dimensions.

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Decision 1353/QD-TTg of the Prime Minister dated 23.09.2008 approving the development plan for coastal economic zones in Vietnam to 2020.

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Decision 1929/QD-TTg of the Prime Minister dated 20.11.2009 approving the development of urban water supply and industrial parks in Vietnam up to 2025 and vision to 2050.

Decision 1930/QD-TTg of the Prime Minister dated 20.11.2009 approving the orientation for development of water drainage in Vietnamese urban centres and industrial parks up to 2025 and a vision towards 2050.

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Circular 02/2005/TT-BTNMT of the Ministry of Natural Resources and Environment dated 24.06.2005 guiding implementation of Decree 149/2004/ND-CP regulating licensing of water resources exploration, exploitation, utilisation and wastewater discharge.

Circular 04/2008/TT-BTNMT of the Ministry of Natural Resources and Environment dated 18.09.2008 guiding formulation and approval of environmental protection schemes.

Circular 05/2008/TT-BTNMT of the Ministry of Natural Resources and Environment dated 08.12.2008 on guidelines for strategic environmental assessments, environmental impact assessments, and environmental protection commitments.
Circular 08/2006/TT-BTNMT of the Ministry of Natural Resources and Environment dated 08.09.2006 guiding the strategic environment assessment, environmental impact assessment and environmental protection commitments.
Circular 08/2009/TT-BTNMT of the Ministry of Natural Resources and Environment dated 15.07.2009 on management regulations and environmental protection in economic zones, high-tech zones, industrial parks and industrial zones.
Circular 09/2009/TT-BXD of the Ministry of Construction dated 21.05.2009 detailing Decree 88/2007/ND-CP of the Government dated 28.05.2007 on urban and industrial park water drainage.
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Circular 12/2011/TT-BTNMT of the Ministry of Natural Resources and Environment dated 14.04.2011 on regulations on hazardous waste management.
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Circular 19/2009/TT-BXD of the Ministry of Construction dated 30.06.2009 on management of investment and construction in industrial zones and economic zones.
Circular 21/2010/TT-BKH of the Ministry of Planning and Investment dated 28.10.2010 detailing the appraisal of bidding dossiers or dossiers of requirements.
Circular 26/2011/TT-BTNMT of the Ministry of Natural Resources and Environment dated 18.07.2011 detailing a number of articles of Decree 29/2011/ND-CP of the Government dated 18.04.2011 on strategic environmental assessment, environmental impact assessment and environmental protection commitment.
Circular 39/2008/TT-BCT of the Ministry of Industry and Trade dated 19.05.2008 guiding the implementation of Decree 174/2007/ND-CP of the Government dated 29.07.2007 on environmental protection charges for solid wastes.
Circular 39/2009/TT-BCT of the Ministry of Industry and Trade dated 28.12.2009 on regulations on the implementation of contents in the Regulations of management of industrial parks issued with Decision 105/2009/QD-TTg of the Prime Minister dated 19.08.2009.
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Joint Circular 107/2010/TTLT-BTC-BTNMT of the Ministry of Finance and the Ministry of Natural Resources and Environment dated 26.07.2010 amending and supplementing Joint Circular 125/2003/TTLT-BTC-BTNMT dated 18.12.2003 and Joint Circular 106/2007/TTLT-BTC-BTNMT dated 06.09.2007 on environmental protection charges for wastewater.
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ANNEXES

Annex 1: The Institutional Analysis and Development Framework (Ostrom 1998)

This list of questions was elaborated with the example of a problem such as overharvesting a common pool resource.

Actors
Who are the individuals, groups, or organisations that influence the outcome of industrial wastewater management either through from industrial activity site planning, permission granting, information dissemination, monitoring, to enforcement of sanctions?
(entity = individual, group, organization, governmental body or department)

- Which activities or processes affect or influence industrial wastewater management?
- Who are the entities involved in each of these activities or processes?
- Which entities are identified by wastewater regulations?
- Which entities are responsible for enforcing the legal regulations?
- Which entities are responsible for monitoring enforcement?
- Which entities are responsible for or involved in the issuance of wastewater discharge permits?
- Which entities may authorize exceptions to this application process?
- Which entities are involved in the planning, approval and construction of industrial zones?
- Which entities operate in industrial zones?
- Which other kinds of rural industrial agglomerations are present in the Mekong Delta?
- Which entities operate in the rural industrial clusters/agglomerations?
- What kind of resources does each actor bring to an action situation?
- How does each actor valuate his actions or the state of the world?
- What kind of knowledge and information does each actor have?
- What are his capabilities for acquiring more?
- How do the actors select their course of action?

Statutory rules, working rules, and others
Which are the rules – formal and informal, statutory, social and shared strategies – that have structured and structure the practices around industrial wastewater management?

- Which are the legal regulations pertaining to industrial wastewater discharge/treatment?
- Do different legal regulations apply for industrial zones or rural industrial clusters?
- Do legal regulations apply differentially to different actors? How?
- What is required of the different actors?
- What is permitted?
- What is prohibited?
- How much of an implementation gap exists?
- What are the 'rules' that the actors refer to when justifying their wastewater management practices?
- Which actors may participate/enter/operate in an industrial zone/cluster?
- What are their attributes?
- What kind of resources do they have?
- What role do they take on with respect to wastewater management?
- What are they allowed to do? What are they not allowed to do? What is the basis?
- How do they obtain information about wastewater regulation?
- Do they have information about the different wastewater treatment technologies?
- Do they understand how the technologies affect wastewater management outcomes?
- How much control/say do they have over wastewater management?
- How can they change this?
- What are the incentives/benefits associated with wastewater management?
- What are the disincentives/costs associated with wastewater management?
- Are there other informal rules? Shared strategies?
- Were there old rules that were adhered to and then replaced by newer rules?

Types of rules
Entry and exit rules affect the number of participants, their attributes and resources, as well as conditions they face on entering or leaving the arena.
Position rules establish positions and roles in the situation.
Scope rules delimit outcomes that can be affected and the actions linked to specific outcomes
Authority rules assign sets of actions that participants in positions at particular nodes must, may, or may not take. With scientific laws about states of the world acted upon, these rules determine the decision tree.
Information rules affect contingent information of participants.
Aggregation rules affect the level of control that a participant in a position exercises in selection of an action at a decision node.
Payoff rules determine benefits and costs assigned to particular combinations of actions and outcomes, establishing incentives and deterrents.

Context: physical conditions and community attributes
What is the contextual setting in which the action arena is embedded? How do the physical conditions or community attributes affect the applicability or feasibility of rules?

- How are the physical conditions within an industrial zone?
- What restricts wastewater management? (spatial constraints?)
- What enables wastewater management? (foresight in building plan?)
- What are the behavioural norms?
- What is the common understanding shared by the occupants with respect to wastewater management?
- Do the actors within these spatial-industrial agglomerations perceive spatial concentration as a factor that facilitates the sharing of costs for infrastructure and knowledge?
- Do the actors perceive these advantages of spatial concentration to apply to water management as well?
- Which proportion of these actors actually follow up on these perceptions?

Action situation
What is the action situation in each of the action arenas?

- Which individuals/enterprises/firms/business/legal entities treat industrial wastewater?
- Do these entities act alone or do they confer with the others?
- Do the actors discharging wastewater have information about the pollution situation, the cost and benefit functions of other actors, and mechanisms by which their actions combine to produce joint outcomes?
- What other events in that region are affected by the discharge of industrial wastewater?
- Which industrial wastewater management technologies are used?
- What are the direct costs and benefits of each actor's possible actions, and what group benefits results from the various outcomes?
- What information must be held secret and what information must be made public?
- What sanctions are imposed for breaking any of the above rules?
- How is compliance imposed for breaking any of the rules above?
- How reliably are sanctions imposed?

Transaction costs
How have or does the institutional arrangement increase transaction costs for the actors involved?

- Does the institutional arrangement create high information costs? Do the actors experience difficulties in searching for and organizing information?
- Does the institutional arrangement create high coordination costs? Do the actors have to invest time/effort in negotiating, monitoring and enforcing agreements? What are the strategic costs resulting from asymmetries in information power and other resources?

Annex 2: Field research protocol

SEMI-STRUCTURED INTERVIEWS

	Interviewees	Date	Location
1	Can Tho Department of Industry and Trade	16.06.2011	Can Tho City
2	Can Tho Department of Planning and Investment	16.06.2011	
3	Can Tho Department of Natural Resources and Environment	22.06.2011	
4	Can Tho Export Processing and Industrial Zones Authority (IZMB)	17.06.2011	
5	Hau Giang Department of Industry and Trade	21.06.2011	Hau Giang
6	Hau Giang Department of Planning and Investment	21.06.2011	
7	Hau Giang Department of Natural Resources and Environment	21.06.2011	
8	Hau Giang Industrial Zones Authority (IZMB)	20.06.2011	
9	Vinh Long Department of Industry and Trade	22.06.2011	Vinh Long
10	Vinh Long Department of Planning and Investment	23.06.2011	
11	Vinh Long Department of Natural Resources and Environment	23.06.2011	
12	Vinh Long Industrial Zone Management Board	23.06.2011	
13	Soc Trang Department of Industry and Trade	28.06.2011	Soc Trang
14	Soc Trang Department of Planning and Investment	28.06.2011	
15	Soc Trang Department of Natural Resources and Environment	28.06.2011	
16	The Management Board of Soc Trang Province Industrial Parks (IZMB)	27.06.2011	
17	Bac Lieu Department of Industry and Trade	29.06.2011	Bac Lieu
18	Bac Lieu Department of Planning and Investment	29.06.2011	
19	Bac Lieu Department of Natural Resources and Environment	29.06.2011	
20	Management Board of Industrial Zone of Bac Lieu (IZMB)	30.06.2011	
21	Ca Mau Department of Industry and Trade	01.07.2011	Ca Mau
22	Ca Mau Department of Planning and Investment	01.07.2011	
23	Ca Mau Department of Natural Resources and Environment	01.07.2011	
24	Ca Mau Industrial Zone Management Board	30.06.2011	
25	Tra Vinh Department of Industry and Trade	05.07.2011	Tra Vinh
26	Tra Vinh Department of Planning and Investment	05.07.2011	
27	Tra Vinh Department of Natural Resources and Environment	05.07.2011	
28	Tra Vinh Industrial Parks Management Board (IZMB)	04.07.2011	
29	Ben Tre Department of Industry and Trade	06.07.2011	Ben Tre
30	Ben Tre Department of Planning and Investment	06.07.2011	
31	Ben Tre Department of Natural Resources and Environment	06.07.2011	
32	Ben Tre Industrial Zone Management Board	07.07.2011	
33	Tien Giang Department of Industry and Trade	08.07.2011	Tien Giang
34	Tien Giang Department of Planning and Investment	08.07.2011	
35	Tien Giang Department of Natural Resources and Environment	08.07.2011	
36	Tien Giang Industrial Zone Management Board	07.07.2011	
37	An Giang Department of Industry and Trade	14.07.2011	An Giang
38	An Giang Department of Planning and Investment	14.07.2011	
39	An Giang Department of Natural Resources and Environment	15.07.2011	
40	An Giang Economic Zone Authority (IZMB)	14.07.2011	
41	Kien Giang Department of Industry and Trade	19.07.2011	Kien Giang

42	Kien Giang Department of Planning and Investment	19.07.2011	
43	Kien Giang Department of Natural Resources and Environment	19.07.2011	
44	Kien Giang Industrial Zones Authority (IZMB)	18.07.2011	
45	Long An Department of Industry and Trade	20.07.2011	Long An
46	Long An Department of Planning and Investment	20.07.2011	
47	Long An Department of Natural Resources and Environment	21.07.2011	
48	Long An Industrial Zones Authority (IZMB)	20.07.2011	
49	Can Tho Environmental Protection Agency (DoNRE)	13.09.2011	Can Tho City
50	Can Tho Department of Natural Resources and Environment's Inspectorate and Centre of Environmental Monitoring	13.09.2011	
51	Vietnam Chamber of Commerce and Industry, Can Tho Branch	14.09.2011	
52	Can Tho Export Processing Zone Authority, Environmental Division	15.09.2011	
53	Can Tho Department of Industry and Trade, Environmental Division and Division for Industrial Parks	16.09.2011	
54	BMC Building Materials and Construction Company (infrastructure developer company of Hung Phu II IZ)	04.10.2011	
55	Saigon-Can Tho Industrial Park Joint Stock Corporation (infrastructure developer company of Hung Phu I IZ)	05.10.2011	
56	Cai Rang District People's Committee	06.10.2011	
57	Thot Not Industrial Park Infrastructure Centre (infrastructure developer company of Thot Not IZ)	06.10.2011	
58	Tra Noc Ward People's Committee, Binh Thuy District	07.10.2011	
59	Household 1, Area 4 in Tra Noc Ward (bordering polluting factory in Tra Noc IZ)	07.10.2011	
60	Phuoi Thoi Ward People's Committee, O Mon District	07.10.2011	
61	Household, Phuoi Thoi Ward, O Mon District (facing Sang Trang Canal polluted by Tra Noc IZ)	07.10.2011	
62	Tra Noc Water Supply Company	11.10.2011	
63	Fatherland Front, O Mon District	11.10.2011	
64	Department of Justice	26.10.2011	
65	Department of Science and Technology, Centre of Environmental Monitoring	27.10.2011	
66	Tuoi Tre News Agency	27.10.2011	
67	Dr Vinh, ex-head of the Department of Science and Technology. Current head of the Dragon Institute for Climate Change	28.10.2011	
68	Soc Trang IZMB Environmental Management Division	01.11.2011	Soc Trang
69	An Nghiep IZ Infrastructure Developer Company	01.11.2011	
70	Soc Trang Water Supply Company	02.11.2011	
71	Soc Trang Department of Justice	02.11.2011	
72	Household 1, An Hiep Commune, Chau Thanh District (near An Nghiep IZ)	03.11.2011	
73	Household 2, An Hiep Commune, Chau Thanh District (near An Nghiep IZ)	03.11.2011	
74	Soc Trang Department of Natural Resources and Environment, Department of Water Resources and Environmental Protection Agency	04.11.2011	

75	Hau Giang IZMB	08.11.2011	
76	Infrastructure developer compancy of Song Hau IZ	08.11.2011	Hau Giang
77	Household 1, Dong Phu Commune, Chau Thanh District (near Song Hau IZ)	10.11.2011	
78	Household 2, Dong Phu Commune, Chau Thanh District (near Song Hau IZ)	10.11.2011	
79	Hau Giang Department of Industry and Trade, Environmental Division and Division for Industrial Parks	11.11.2011	
80	Hau Giang Department of Justice	11.11.2011	Hau Giang
81	Hau Giang Water Supply Company	11.11.2011	
82	Hau Giang Chau Thanh District People's Committee	16.11.2011	
83	Household 1, Mai Dam Commune (near planned Phu Huu IZ)	16.11.2011	
84	Household 2, Mai Dam Commune (near planned Phu Huu IZ)	16.11.2011	
85	Director of Green Environment Joint Stock Company (environmental consultancy)	05.12.2011	An Giang
86	Household 1, Binh Hoa Commune (near Binh Hoa IZ)	06.12.2011	
87	Household 2, Binh Hoa Commune (near Binh Hoa IZ)	06.12.2011	
88	Vice area manager, Phu Hoa 2 Hamlet, Binh Hoa Commune (where Binh Hoa IZ is located)	06.12.2011	
89	An Giang Department of Justice	07.12.2011	
90	An Giang Department of Industry and Trade, Division for Industrial Parks	07.12.2011	
91	Vice manager of Binh Long Commune	08.12.2011	
92	Household and hamlet manager, Binh Long Commune (near Binh Long IZ)	08.12.2011	
93	An Giang IZMB Environmental management division	08.12.2011	
94	An Giang Water Supply Comapny	09.12.2011	
95	Saigon-Mien Tay Brewery (factory in Tra Noc IZ)	22.12.2011	Can Tho City
96	Area manager, Tra Noc Ward, Binh Thuy District	10.01.2012	
97	Journalist, Vietnam Net	11.01.2012	Ho Chi Minh City
98	Tan Thuan Export Processing Zone Management Board (first IZ in Vietnam)	12.01.2012	
99	Ho Chi Minh City Export Processing and Industrial Zone Authority, Environmental divison	12.01.2012	
100	David Koh, Vietnam researcher, Institute of Southeast Asian Studies	26.01.2012	Singapore
101	Vice Director, Southwestern Department for Environmental Protection	16.02.2012	Can Tho City
102	Area manager, Sang Trang Canal, Phuoi Thoi Ward, O Mon District	17.02.2012	

PARTICIPANT OBSERVATION

AKIZ Workshop	06.09.2011	Can Tho City
AKIZ Workshop	07.09.2011	
Vietwater 2011, wastewater conference	24.11.2011	Ho Chi Minh City
Vietwater 2011, wastewater conference	25.11.2011	
WISDOM PhD Scientific Seminar, Can Tho University	21.02.2012	Can Tho City

	WISDOM PhD Scientific Seminar, Can Tho University	22.02.2012
	WISDOM PhD Scientific Seminar, Can Tho University	23.02.2012

PERSONAL COMMUNICATIONS

1	Rene Heinrich, Project Coordinator, AKIZ Project	07.06.2011	Can Tho City
2	Bui Thi Nga, Lecturer, College of Environment	08.06.2011	
3	Rene Heinrich, Project Coordinator, AKIZ Project	16.06.2011	
4	Vo Thanh Danh, Lecturer, School of Economics and Business Administration	20.06.2011	
5	Le Thi Nguyet Chau, Lecturer, School of Law	20.06.2011	
6	Rene Heinrich, Project Coordinator, AKIZ Project	16.08.2011	
7	Frank Pogade, Chief Technical Adviser, GFA Consulting Group, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)	07.09.2011	
8	Personnel of the Environmental Division, in Can Tho Industrial Park Infrastructure Developer Company	08.09.2011	
9	Hai Uyen, Personnel of Environmental Protection Agency, DoNRE	08.09.2011	
10	Niklas Trautmann, German engineer, Institute for Sanitary Engineering and Waste Management, AKIZ Project	11.09.2011	
11	Frank Schweitzer, German consultant, GIZ	16.09.2011	
12	Loan, Vietnam Chamber of Commerce and Industry, Can Tho Chapter	20.09.2011	
13	Giac, Personnel, Environmental division, DoIT	21.09.2011	
14	Personnel of the Environmental Division, in Can Tho Industrial Park Infrastructure Developer Company	22.09.2011	
15	Loan, Vietnam Chamber of Commerce and Industry, and Manager, Environmental division, Construction and EIA consultancy company	03.10.2011	
16	Personnel of the Environmental Division, in Can Tho Industrial Park Infrastructure Developer Company	11.10.2011	
17	Rene Heinrich, AKIZ Manager	25.10.2011	
18	Personnel of the Environmental Division, in Can Tho Industrial Park Infrastructure Developer Company and Personnel, Can Tho Environmental Police	13.11.2011	
19	Unidentified officials, Mai Dam Commune People's Committee	16.11.2011	Hau Giang
20	Cuc, Inspector, Can Tho DoNRE	19.11.2011	Can Tho City
21	Director of Centre for Environment Science and Technology, Southern Institute of Water Resources Research (research centre)	23.11.2011	Ho Chi Minh City
22	Director of An Giang environmental Protection Agency EPA, DoNRE	07.12.2011	An Giang
23	Rene Heinrich, Project Coordinator, AKIZ Project	14.12.2011	Can Tho City
24	Rene Heinrich, Project Coordinator, AKIZ Project	13.01.2012	
25	Rene Heinrich, Project Coordinator, AKIZ Project	21.02.2012	
26	Personnel, Centre of Environmental Monitoring, Department of Science and Technology	21.02.2012	
27	David Biggs, Vietnam researcher	11.12.2012	Bonn
28	Melanie Beresford, Vietnam researcher	11.12.2012	

Interview protocol

This introduction was used in all interviews: Good afternoon, my name is Siwei Tan and I am a researcher from University Bonn in Germany. I am working for a research project financed by the Vietnamese and German governments known as WISDOM, which aims to establish a water-related information system for the Mekong Delta. Interviews are anonymous. Could I use a recorder?

List of questions used in interviews #1-48

Interviewee	Semi-structured interview questions
Department of Planning and Investment	Q1: (Warm up) Could you please perhaps tell me about the Department of Planning and Investment. How big is this department, what are your **core activities** and your **main partners**?
	Q2: Could you please tell me about the **current situation of investment** in the province? Who are the **main investors**, which are the **main investment activities**, and which **industrial sectors** attract domestic or foreign investors?
	Q3: Is there any investment in **environmental technology** or **business infrastructure** like industrial zones?
	Q4: How are investors selected? Is there a **preference** for certain types of investors?
	Q5: In many countries, **public-private partnerships** (PPPs) are very popular. (because the public sector can benefit from the private sector and the private can contribute to the public) Are there any PPPs in this province?
	Q6: What has the DPI planned for this province, what are the goals? How do these plans get implemented? Who assesses the **success in implementation?**
	Q7: How does the planning process happen? For instance, who proposes an idea, who is contacted, who decides, who can **veto**?
	Q8: Since the DPI is responsible for planning and investment, I assume that your work is also relevant for the Industrial Zone Management Board and the Department of Industry and Trade. What kind of **cooperation** happens?
Department of Industry and Trade	Q1: (Warm up) Could you please tell me about the Department of Industry and Trade. How big is this department, what are your **core activities** and your **main partners**?
	Q2: Could you tell me about the current situation **of industrialisation** in this province? Which are the most important industrial sectors? In terms of $ or employment? What policies are in place to promote industrial growth, what are the main goals?
	Q3: How does the DoIT **classify** the **types of industrial activities**? How 'large' is 'large-scale industry', how small is small-scale industry? How about the difference between industrial craft villages, or economic zones or industrial zones?
	Q4: Could you tell me more regarding **large-scale industry** in this province? What kind of industrial activity, which are the main types of companies, where are they located?
	Q5: Could you now tell me more regarding **small and medium-scale industry** in this province? What types of enterprises are involved, and where are these located (urban or rural areas)? Are there craft villages here?
	Q6: Comparing the large-scale and small and medium-scale industries, which one would you say is more important to this province?
	Q7: What is the **industrial policy** in this province?
	Q8: Could you tell me more about this **planning process behind industrial policies**?
	Q9: What is the **role of industrial zones in the industrial policy** of this province?

Department of Natural Resources and Environment	Q1: (warm up) Could you tell me about the Department of Planning and Investment. How big is this department, what are your **core activities** and your **main partners**?
	Q2: I would be interested to hear about what your Department thinks of the effects of industrialisation on water resources in this province.
	Q3: Is industrial wastewater concentrated at certain places or dispersed throughout the province? Is industrial wastewater worse at certain times of the year?
	Q4: What are the biggest challenges facing industrial wastewater management in this province?
	Q5: Could you tell me about the environmental management of the industrial zones in this province?
	Q6: I read in the Vietnamese newspapers that there is an environmental police force, and a black list where polluting enterprises. Could you tell me more about the environmental police in this province? Is there a black list here?
	Q7: What is public opinion in this province about industrial wastewater pollution? Have there been public complaints or protests?
Industrial Zone Management Board	Q1: In my research I was unable to get a clear overview of the **number of industrial parks** in this province. Could you please tell me exactly how many are operating today? How many are being **planned**, how many are **already being built**?
	Q2: What is the **occupancy rate**? What **kind of enterprises** are these?
	Q3: How many **labourers** work in each of the industrial zones? How much of this province's total industrial production happens within these industrial zones? Which zone is the most successful in providing jobs or industrial production?
	Q4: How does an industrial zone get set up in this province? What kind **of role does the IZMB play** in the establishment of new IZs? Who **proposes the plan**, who **chooses the location**? Who **finances construction**?
	Q5: I was told that the industrial zone management boards in the Delta need more funds in order to build **central wastewater treatment plants**. What is the **current situation** of wastewater treatment in the zones you manage? Is it centralised or decentralised? What is the processing capacity of this treatment plant? Whom does this wastewater technology come from? Who built the treatment plant, who maintains it?
	Q6: Have any cases of untreated wastewater discharge been discovered? What would happen to these enterprises?
	Q7: Would you say that the enterprises operating in an industrial zone are a kind of **community**? Why?
	Q8: Do the enterprises within the industrial zone **share information** with each other about new business regulations? Who facilitates this dissemination of information?
	Q9: Do you consider industrial parks to be **competition**? Who is your competition? Are they other provinces in the Delta or other regions in Vietnam?

These questions were drafted based on the questions in Ostrom's Institutional Analysis and Development framework (Ostrom 1998), and the element of transaction costs were operationalised using the theses of theories of spatial agglomerations.

Annex 3: Interview permit

BỘ GIÁO DỤC VÀ ĐÀO TẠO
TRƯỜNG ĐẠI HỌC CẦN THƠ

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: /ĐHCT-HTQT
V/v xin phép cho NCS nước ngoài đến công tác tại địa phương.

Cần Thơ, ngày tháng năm 2011

Kính gửi**: -** Sở Ngoại vụ Tỉnh An Giang.

Trong khuôn khổ Dự án WISDOM giai đoạn II, Trường Đại học Cần Thơ có tiếp nhận các nghiên cứu sinh thuộc Dự án sang thực hiện nghiên cứu tại Trường. Theo kế hoạch Trường cùng Nghiên cứu sinh nước ngoài đến làm việc tại các Sở, Ngành thuộc địa bàn tỉnh An Giang trong khoảng thời gian từ 14/7/2011 đến ngày 15/7/2011.

Thông tin đoàn Khách:

- Cô Siwei Tan ; Quốc tịch: Singapore; Số hộ chiếu: E2280727E.

Và trợ lý: Đặng Quỳnh Giao

Chương trình làm việc tại địa phương:

Ngày 14/7/2011:

8:00 đến 9:00: Làm việc với Sở Kế hoạch và Đầu tư.

10:00 đến 11:00: Làm việc với Sở Công Thương.

14:00 đến 15:00: Làm việc với Ban Quản lý Khu Kinh Tế Cửa Khẩu

Ngày 15/7/2011:

8:00 đến 9:00: Làm việc với Sở Tài nguyên và Môi trường.

Mục đích chuyến công tác:

Trao đổi thông tin về Công nghiệp hóa và việc quản lý các nguồn nước thải, đặc biệt ở các khu Công nghiệp tại An Giang để phục vụ cho đề tài nghiên cứu.

Thầy Lê Việt Dũng, Phó Hiệu Trưởng Trường Đại học Cần Thơ.*(Điện thoại: 0913705982, e-mail:lvdung@ctu.edu.vn) sẽ hướng dẫn đoàn trong thời gian làm việc tại địa phương*. Chi phí liên quan đến chuyến công tác do đoàn tự thanh toán.

Trường Đại học Cần Thơ kính mong Sở Ngoại vụ tỉnh An Giang chấp thuận, và Các cơ quan hữu quan tạo điều kiện thuận lợi cho Đoàn đến công tác theo kế hoạch.

Kính chào trân trọng.

HIỆU TRƯỞNG

Nơi nhận:

- Như trên;
- Sở KHĐT; Sở Công Thương;Sở TN và MT;
- BQL khu KT cửa khẩu An Giang
- Lưu KHTH, HTQT**.**

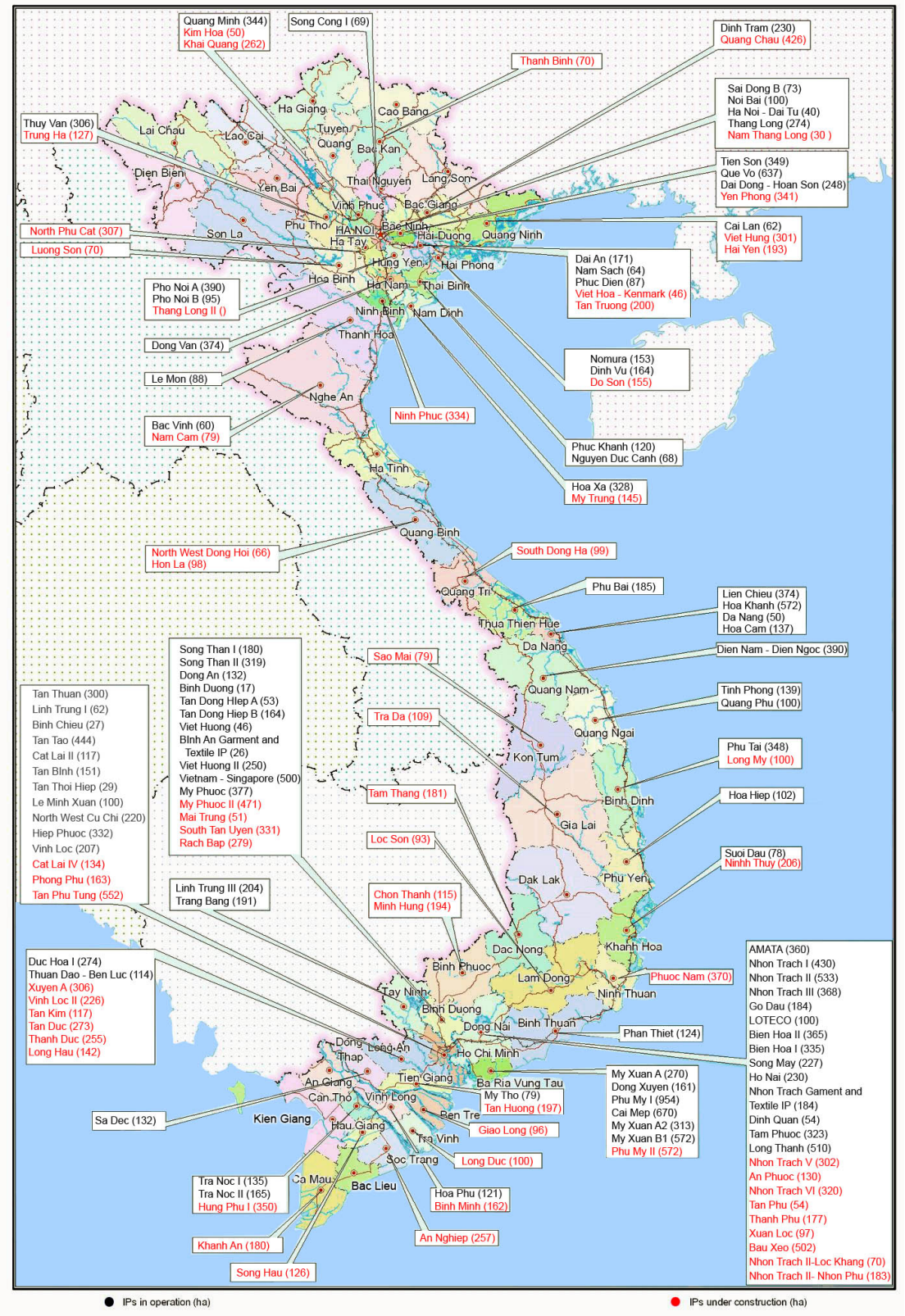
KẾ HOẠCH CÔNG TÁC CHI TIẾT TẠI AN GIANG

(Đính kèm Công văn số: /ĐHCT-HTQT)

Nghiên cứu này được hướng dẫn bởi tiến sĩ Lê Việt Dũng, trường Đại học Cần Thơ

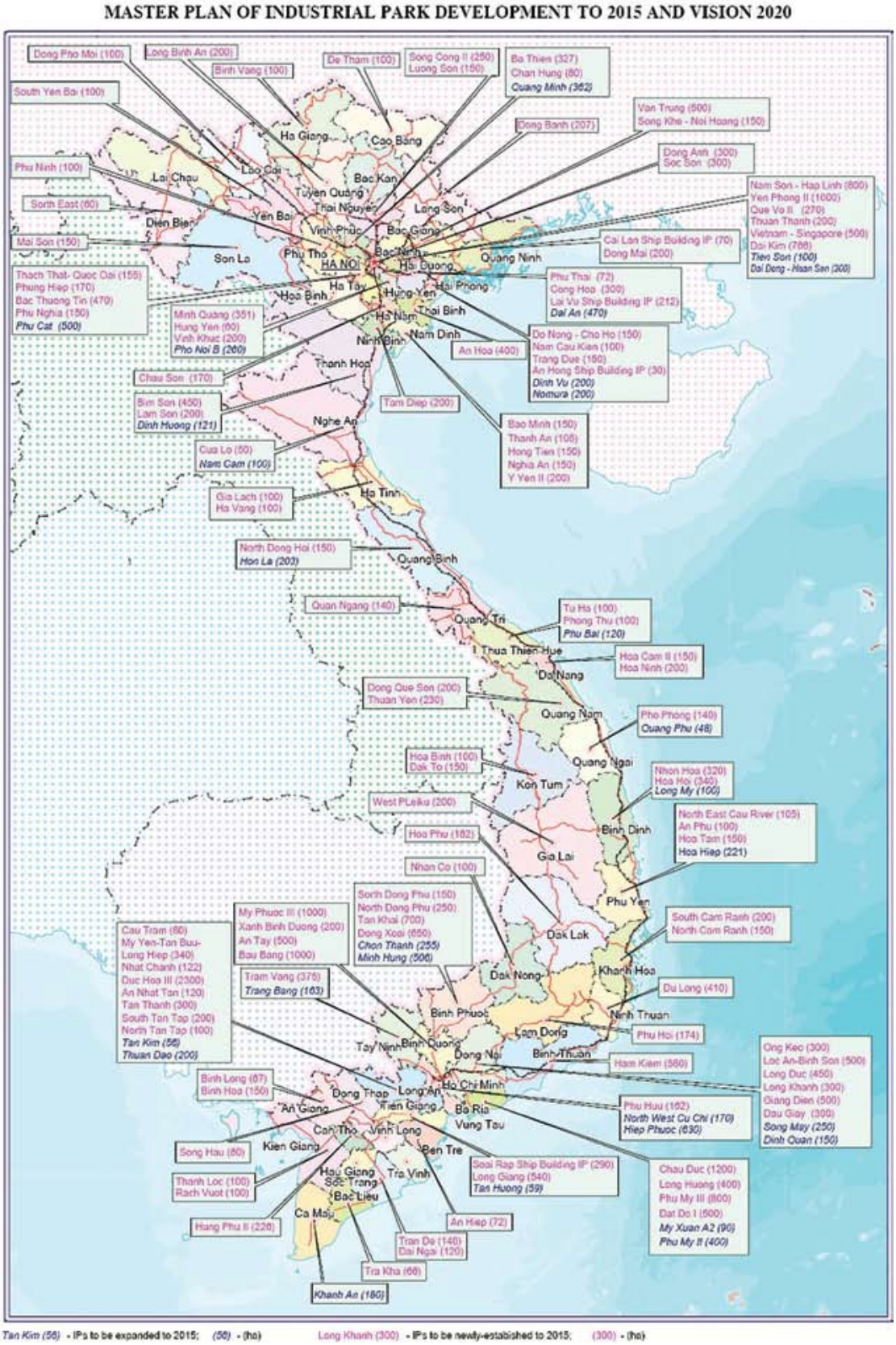
Ngày	Tổ chức phỏng vấn	Nội dung phỏng vấn	Thành phần tham dự
14/07/2011 8:00 - 9:00	Sở Kế Hoạch và Đầu Tư	- Chính sách công nghiệp địa phương - Giá trị đầu tư của tỉnh - Cấu trúc của khu công nghiệp	Nghiên cứu sinh: Siwei Tan Trợ lý: Đặng Quỳnh Giao
14/07/2011 10:00 - 11:00	Sở Công Thương	- Vị trí và tầm quan trọng của doanh nghiệp qui mô vừa và nhỏ - Vị trí và tầm quan trọng của doanh nghiệp qui mô lớn - Sự phát triển của kinh tế nông thôn	Nghiên cứu sinh: Siwei Tan Trợ lý: Đặng Quỳnh Giao
14/07/2011: 14:00 - 15:00	Ban Quản Lý Khu Kinh Tế Cửa Khẩu	- Vai trò của khu kinh tế cửa khẩu trong phát triển địa phương. - Hợp tác đối tác - Nhiệm vụ và hoạt động của tổ chức	Nghiên cứu sinh: Siwei Tan Trợ lý: Đặng Quỳnh Giao
15/07/2011 08:00 - 09:00	Sở Tài Nguyên và Môi Trường	- Quản lý nước thải công nghiệp của tỉnh - Kiểm tra và cưỡng chế - Ý kiến của dư luận về ô nhiễm công nghiệp	Nghiên cứu sinh: Siwei Tan Trợ lý: Đặng Quỳnh Giao

Annex 4: Map of industrial and export processing zones in Vietnam from the MPI



Source: Vietnam Industrial Parks Review and Ministry of Planning and Investment 2008

Annex 5: Map of planned industrial zones in Vietnam



Source: Vietnam Industrial Parks Review and Ministry of Planning and Investment 2008

Comparing this map to the previous map in Annex 4, it is obvious that there are grand plans for expansion and establishment of more industrial zones in Vietnam.

Annex 6: Chronology of industrial zone development in Vietnam, 1991- 2009

Time	Legislative document	Development	Notes
Sept 1991		First industrial zone (export processing zone) set up in Ho Chi Minh City by Taiwanese investors.	
Oct 1991	Decree 322-HDBT of the Council of Ministers dated 18.10.1991 on special export processing zones	"Regulation on Export Processing Zones" issued	Export processing zones (EPZs) and industrial zones (IZs) were thus initially separately regulated
Dec 1994	Decree 192-CP of the Government dated 28.12.1994 promulgating the regulation on industrial zones	"Regulation on Industrial Zones" issued	
Aug 1996	Decision 519/TTg of the Prime Minister dated 06.08.1996 on the list of industrial zones where investment shall be given priority until 2000	List of industrial zones where investment shall be given priority till 2000 is passed by the Prime Minister	The decision to pursue IZs as an industrial policy tool precedes efforts to organise its management.
Aug 1996	Decision 595/TTg of the Prime Minister dated 27.08.1996 on the establishment of the management office of industrial parks	Managing Office of Industrial Zones legally established.	The Managing Office of Industrial Zones is the first national entity responsible for IZ development and management, but it was clearly not intended to be a permanent body. 4 months later, it is replaced. The Vietnam IZ Management Board is sui generis since it is not a ministerial agency. 4 years later in 2000, this board is reorganised. It did not survive the second reorganisation in 2007.
Oct 1996	Decision 781/TTg of the Prime Minister dated 23.10.1996 assigning the task of preparing for the management of the industrial parks	Prime Minister assigns the task of preparation for the management of industrial zones	
Dec 1996	Decision 969/TTg of the Prime Minister dated 28.12.1996 on the establishment of the board for the management of industrial zones in Vietnam	Vietnam Industrial Zones Management Board established by Prime Minister	
Apr 1997	Decree 36-CP of the Government dated 24.04.1997issuing the regulation on industrial zones, export processing zones and high-tech zones	"Regulation on Industrial Zones, Export Processing Zones and Hi-Tech Zones" issued	This sees the subsumation of EPZs under the regime for IZs, instead of the hitherto dual system. It also marked the interest of the government in introducing a new form, the hi-tech zone (HTZ), the first of which is approved about 1.5 years later.
Aug 1997	Decision 713/TTg of the Prime Minister dated 30.08.1997 supplementing the list of industrial zones where investment shall be given priority till 2000	List of industrial zones with investment priority supplemented	The decision to continue expanding establishment of IZs comes quickly (after merely a year).
Dec 1997	Decision 1144/TTg of the Prime Minister dated 29.12.1997 on the establishment of a steering committee for drafting the law on industrial zones	Steering Committee for drafting the Law on Industrial Zones is established by the Prime Minster	No Law on Industrial Zones has been approved or promulgated. This legislative attempt ends in the reorganisation of management structures in 08.2000.
Oct 1998	Decision 198/1998/QD-TTg of the Prime Minister dated 12.10.1998 on the establishment of Hoa Lac Hi-Tech Zone	Hoa Lac Hi-Tech Zone in Hanoi is the first hi-tech zone (HTZ) in Vietnam	The early date of legal establishment belies the actual pace of development: the management board was only set up in 01.2000, and as of 09.2012, the HTZ is still over 90% empty.
Aug 2000	Decision 99/2000/QD-TTg of the Prime Minister dated 17.08.2000 regarding the reorganisation of the Vietnam industrial zones management board. Decision 100/2000/QD-TTg of the Prime Minister dated 17.08.2000 transferring the provincial-level industrial zone management boards to the provincial People's Committee	Vietnam Industrial Zones Management Board reorganised, provincial Industrial Zone Management Boards transferred to the provincial governments	This is the first step towards the current management model. The Vietnam Industrial Zones Management Board eventually ceased operations at some subsequent point.
Apr 2001	Decision 53/2001/QD-TTg of the Prime Minister dated 19.04.2001 on policies for bordergate economic zones	Economic policy towards bordergate economic zones passed by Prime Minister	The Vietnamese government further expands its repertoire of industrial zones, after the hi-tech zone, by moving on to explore the "economic zone". This policy is amended 4 years later, when the first bordergate EZ is finally set up.

Aug 2002	Decision 62/2002/QD-BKNMT of the Ministry of Science Technology and Environment dated 09.08.2002 promulgating regulations on environmental protection in industrial zones	"Regulation on Environmental Protection in Industrial Zones" promulgated by Ministry of Science Technology and Environment	About 9 years after the first IZ is established, environmental protection is legislated for. The omission of EPZ, HTZs and EZs appears to suggest either their non-existence or the
May 2003	Decision 95/2003/QD-TTg of the Prime Minister dated 13.05.2003 approving the overall planning and investment project on the first-phase construction of Ho Chi Minh City hi-tech zone	Planning and investment project on the first-phase of Ho Chi Minh City Hi-Tech Zone is approved by Prime Minister	The legislation is preceded by actual investment proposal and decisions. The regulation also now separates HTZs from IZs, EZs and EPZs, putting it under the management of the Minister of Science, Technology and Environment, but potentially overlapping with the previous "Regulation on Industrial Zones, Export Processing Zones and Hi-Tech Zones" from 1997.
Aug 2003	Decree 99/2003/ND-CP of the Government dated 28.08.2003 promulgating the regulations on hi-tech zones	"Regulation on Hi-Tech Zones" promulgated	
Oct 2004	Decision 183/2004/QD-TTg of the Prime Minister dated 19.10.2004 on the mechanism of providing central budget capital support for investment in the construction of technical infrastructure of industrial zones in localities meeting with socio-economic difficulties	Mechanism for central budget support for industrial zones in localities with socio-economic difficulties is passed.	The problem of finding investors for infrastructure development in industrial zones attracts policy attention after about a decade of pursuing industrial zones as a policy goal than a means of development.
Feb 2005	Decision 35/2005/QD-TTg of the Prime Minister dated 22.02.2005 establishing Khanh Binh bordergate economic zone in An Phu district of An Giang province	The first (bordergate) economic zone in Vietnam is to be established in An Giang province	The concept of bordergate economic zones came up in 2001 but was not implemented, or implementable until 4 years later.
Oct 2005	Decision 273/2005/QD-TTg of the Prime Minister dated 31.10.2005 amending and supplementing a number of articles of Decision 53/2001/QD-TTg of the Prime Minister dated 19.04.2001 on policies for bordergate economic zone	Policy on Bordergate Economic Zones amended	
Aug 2006	Decision 1107/QD-TTg of the Prime Minister dated 21.08.2006 approving the planning on development of industrial parks in Vietnam up to 2015 and orientation to 2020	Prime Minister approves the planning of development of industrial zones in Vietnam up to 2015	This supplements the list of IZs that were prioritised for investment in 08.1997.
Feb 2007	Decision 224/QD-TTg of the Prime Minister dated 08.02.2007 on the transfer of the management of industrial zones and economic zones under the Prime Minister to the provincial People's Committees	Industrial Zone and Economic Zone Management Boards under the Prime Minister are transferred to provincial governments	Despite the regulation in Aug 2000 that ought to have transferred provincial IZMBs to the provincial government, the "delegation" is not complete until 7 years later.
Apr 2007	Decision 45/2007/QD-TTg of the Prime Minister dated 03.04.2007 on regulation of competent management staff of industrial zone, export processing zone, hi-tech zone and economic zone management boards under the Ministry and People's Committees of provinces and cities directly under the central government	Ministries and provincial governments given "competence" to manage staff of management boards of industrial zones, export processing zones, and economic zones	This ends the national management entity, the Vietnam IZ Management Board.
Mar 2008	Decree 29/2008/ND-CP of the Government dated 14.03.2008 on the regulation on industrial zones, export processing zones and economic zones	"Regulation on Industrial Zones, Export Processing Zones and Economic Zones" issued.	This regulation comes 11 years after the first legislative attempt (Regulation on IZs, EPZs and HTZs), and only 5 years after the previous had been contradicted by another regulation (on HTZs alone).
Sep 2008	Decision 1353/QD-TTg of the Prime Minister dated 23.09.2008 approving the development plan for coastal economic zones in Vietnam to 2020	"Master plan on development of coastal economic zones of Vietnam up to year 2020" approved by Prime Minister	After bordergate economic zones, coastal economic zones are identified as the next form of industrial cluster to support.

Nov 2008	Circular 19/2008/TT-BXD of the Ministry of Construction dated 20.11.2008 guiding the elaboration, evaluation, approval and management plans to build industrial zones and economic zones	Ministry of Construction passed a circular "guiding elaboration, evaluation, approval and management plans to build IZs and EZs"	The Ministry of Construction steps in 17 years after IZs have been and are being constructed to issue guidelines on the construction of IZs.
May 2009	Decision 43/2009/QD-TTg of the Prime Minister dated 19.05.2009 on mechanism of national capital budget support for the construction of technical infrastructure in industrial zones in localities with socio-economic difficulties	The mechanism for central budget support for industrial zones in localities with socio-economic difficulties is expanded.	
Jun 2009	Circular 19/2009/TT-BXD of the Ministry of Construction dated 30.06.2009 stipulating the management of investment and construction in industrial zones and economic zones	Ministry of Construction passed a circular on the management of investment and construction in IZs and EZs	
Jul 2009	Circular 08/2009/TT-BTNMT of the Ministry of Natural Resources and Environment dated 15.07.2009 on regulations on management and environmental protection in economic zones, hi-tech zones, industrial zones and industrial parks	New Ministry of Natural Resources and Environment passes "Regulations on Management and Environmental Protection in EZs, HTZs and IZs"	The preceding "Regulations on Environmental Protection in Industrial Zones" had omitted EZs, EPZs and HTZs, and this new legislation remedies that by additionally seeing that they are all similarly managed.
Aug 2009	Decision 105/2009/QD-TTg of the Prime Minister dated 19.08.2009 promulgating the regulation on management of industrial parks**	"Regulations on Management of Industrial Parks**" is passed by Prime Minister	By this time, the concept of industrial clusters has been further extended to include a new form, the industrial park.
Oct 2009	Decision 126/2009/QD-TTg of the Prime Minister dated 26.10.2009 on mechanism of central budget capital support for investment and development of infrastructure systems of coastal economic zones	Prime Minister issued mechanisms to support the central budget for investment in developing infrastructure systems for coastal economic zones.	The experience with bordergate economic zones, which were slow to take off despite having first set up a legislative framework, appears to inspire the Vietnamese government to a different approach with coastal economic zones. Perhaps this also signifies a greater strategic importance.
Nov 2009	Decision 1930/QD-TTg of the Prime Minister dated 20.11.2009 approving orientations for development of water drainage in Vietnamese urban centres and industrial zones up to 2025 with a vision towards 2050	Prime Minister approves plan on development of urban water supply and in IZs up to 2025 with a vision to 2050.	This strategy or planning document casts the light on the fact that the IZs had been established and developed for 18 years without a plan for water supply.
Dec 2009	Circular 39/2009/TT-BCT of the Ministry of Trade dated 28.12.2009 on Regulations on management of industrial parks	Ministry of Industry and Trade passed a circular on the contents of the Regulations on Management of Industrial Parks**	The management structure of the industrial park is different from that for IZs, EZs and EPZs, since the Ministry of Industry and Trade is involved.

* Official translations of the titles of the regulations often referred to "industrial parks" and "hi-tech parks; but in order to disambiguate, this author has chosen to use "industrial zones" and "hi-tech zones" for the industrial clusters of a larger dimension managed by special purpose management boards.

** Industrial parks in this table refers to *cum cong nghiep*, a smaller variant.

The legislative documents marked out in brown pertain to the regulation of the industrial clusters; the documents marked out in blue regulate the management structures, while the documents marked out in pink indicate the milestones marking the further adoption of other forms of industrial clusters.